

THE NEXT ISSUE WILL APPEAR ABOUT OCTOBER

Vol. 15

JUNE, 1926

No. 6

ENTRIES 4432-5778

BOTANICAL ABSTRACTS

PUBLISHED UNDER THE DIRECTION OF

THE BOARD OF CONTROL OF BOTANICAL ABSTRACTS, INC.

IMPORTANT NOTICE

Beginning with the literature of 1926, the Union of American Biological Societies will inaugurate **BIOLOGICAL ABSTRACTS**, the first issue to appear about July, 1926. The journal will strive to present adequate abstracts and accurate indexes of the world's literature in theoretical and applied biology.

As announced, **BOTANICAL ABSTRACTS** will be merged in the new journal, as will **ABSTRACTS OF BACTERIOLOGY** and the abstracting sections of several other journals. In order, however, that there may be no serious gap between Botanical Abstracts and Biological Abstracts, the present additional volume (Volume 15) of Botanical Abstracts is being issued to cover the literature appearing to the close of 1925, as well as to bring up the more serious arrears and omissions during the period covered by Botanical Abstracts (1919-1925). This additional volume will be kept open long enough (year or more, with issues becoming less frequent) to permit at least moderately complete accumulation of the material in question; for a time, therefore, Biological Abstracts and Botanical Abstracts will be appearing side by side, though obviously without duplication of effort.

The **INDEXES** for Volumes 12, 13, and 14 (respectively Nos. 10, 12, and 12) of Botanical Abstracts are in preparation and when issued will be distributed to subscribers without further charge.

All correspondence regarding subscriptions, back sets, and the index for the first ten volumes of Botanical Abstracts should be addressed to the Business Manager of Botanical Abstracts, Natural Science Building, Ann Arbor, Michigan, U. S. A.

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Published for the Owners

THE BOARD OF CONTROL OF BOTANICAL ABSTRACTS, INC.

by

THE WILLIAMS & WILKINS COMPANY

MT. ROYAL AND GUILFORD AVENUES

BALTIMORE, U. S. A.

Entered as second-class matter, November 9, 1918, at the post-office at Baltimore, Maryland, under the Act of March 3, 1879

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BOTANICAL ABSTRACTS

A monthly serial furnishing abstracts and citations of publications in the international field of botany in its broadest sense

UNDER THE DIRECTION OF

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J. R. SCHRAMM, Editor-in-Chief

FREDERICK V. RAND, Associate Editor-in-Chief

University of Pennsylvania, Philadelphia, Pa.

Vol. 15

JUNE, 1926

No. 6

ENTRIES 4432-5778

AGRONOMY (CROPS AND SOILS)

A. J. PIETERS, *Editor*

MARY R. BURR, *Associate Editor (Crops)*

T. D. RICE, *Associate Editor (Soils)*

(See also in this issue Entries 4612, 4648, 4671, 4706, 4707, 4709, 4710, 4711, 4717, 4737, 4875, 4876, 4887, 4911, 4921, 4954, 4986, 4997, 5163, 5265, 5307, 5350, 5383, 5403, 5439, 5461, 5489, 5505, 5543)

4432. ANONYMOUS. Experiments with wheat and oats. State Research Farm, Werribee. Permanent fertilizer trials. Jour. Dept. Agric. Victoria 23: 624-629. 1 graph. 1925. More superphosphate is recommended for both oats and wheat.—*Wm. E. Lawrence.*

4433. ANONYMOUS. Improving the oat yield. Jour. Dept. Agric. Victoria 23: 288-289. 1925. Superphosphate up to 2 hundredweight per acre is profitable. Algerian and Palestine varieties gave highest yields.—*Wm. E. Lawrence.*

4434. ANONYMOUS. Plant improvement in China. China Jour. Sci. and Arts. 3: 411-412. 1925.—Mention is made of plant improvement work under H. H. Love at the University of Nanking, and of that under H. C. Etter at Yenching University (Peking).—*Albert N. Steward.*

4435. ANONYMOUS. Rubber, its friends and foes. Tropical Life. 21: 154-156. 1925.—The article contains a rather complete appraisal of the present rubber situation from the editor's standpoint. Production in different parts of the world and the possibilities of new producing areas are considered.—*H. N. Vinall.*

4436. ANONYMOUS. Sisal growing for Cuba. Parts I & II. Tropical Life. 21: 134-135, 150-151. 1925.—(Direct quotations from article by GEORGE RENO, Cuba Review, January, 1925.)—Cuba has long been a 1-crop country, that is, sugar for more than 50 years has been the principal source of revenue. No other crop sufficiently remunerative to compete with sugar cane had, until recently, been found; Henequen, the plant producing sisal, appears able to do this. It is indigenous to Yucatan, which has always enjoyed a monopoly on its production. The frequent revolutions in Mexico have made the supply uncertain in Yucatan and cordage manufacturers began to search for other localities where Henequen could be grown, finding proper soil and climatic conditions in Cuba. On the plantations there established, the quantity and quality of fiber are far ahead of any obtained in Yucatan and the net profits greater than from sugar cane. Cuba has millions of acres of land better adapted

to the growing of Henequin than any in Yucatan. The top soil is richer, the limestone substrata are softer and the rainfall is 8 times as great; transportation facilities are also better and labor is abundant. Because the top soil is rather shallow on the Henequen lands they are not suited to sugar cane and are therefore cheap. The capital required for placing a given area in Henequen is less than for establishing a sugar cane plantation. The advantages of sisal production in Cuba are stated as follows: Henequen lands are cheap, the plant lives 12-20 years and reproduces itself by means of suckers, it cannot burn and animals will not eat it, cultivation is easy and defibering machines not expensive, the crop may be stored a long time without deterioration, the demand is constant and the product not subject to speculation.—*H. N. Vinall.*

4437. ANONYMOUS. Strawberry clover. Jour. Dept. Agric. Victoria 23: 504-505. 1925.—Strawberry clover (*Trifolium fragiferum*) is a valuable permanent pasture plant for swamps, and wet marshy land. It may be grown successfully in districts ranging from temperate to cold climatic conditions.—*Wm. E. Lawrence.*

4438. ANONYMOUS. The sugar industry of the Indo Gangetic Plain. Internat. Sugar Jour. 27: 527-535. 1925.—Historical data concerning the area in question, together with an account of cane culture in ancient-time and quotations from certain writings of antiquity are given. Although sugar has been one of the staple crops of this area since early times it was not until the latter part of the 18th century that foreign capital became interested in developing the sugar trade. The progress of this development is outlined, and data are given relative to extent of the industry; source of cane; transport; varieties grown; composition of cane; factory yields; climate; soils; and diseases. In connection with diseases the author states that mosaic "is widely spread all over northern India" and probably causes very great loss, and "being unrecognized and accepted it has not up to the present time been accorded concerted prophylactic action." Insect pests; cultivation; irrigation; and the gur industry apart from the sugar industry are discussed.—*Nellie E. Fealy.*

4439. A., A., AND W. E. B. Weeds and their control. [Rev. of: KORSMO, EMIL. Ogräs i nutidens jordbruk. (Weeds in present day agriculture.) 694 p. J. W. Cappelens: Oslo, 1925.] Nature 116: 810-811. 1925.—This is probably the most valuable book so far published with regard to the biological viewpoint. It covers detailed studies by the author of the life histories over a period of 30 years as well as experimental field control.—*O. A. Stevens.*

4440. ADAMS, A. B. Phosphatic fertilizers as manures for grass land. Jour. Dept. Agric. Western Australia 2nd ser. 2: 367-369. 2 fig. 1925.—One hundredweight (cwt.) of superphosphate per acre increased the yield 97%, and 2 cwt. increased it 175% according to averages of result in Victoria. The percentage of legumes was increased from 26 to 61% by 1 cwt. per acre, and to 71% by 2 cwt. per acre. It is stated that the quality of feed is greatly improved by superphosphate application. The health of cattle is also noticeably improved, especially if there is a decided deficiency of phosphorous in the untreated pasture. The character of the soil is improved both chemically and physically. Greater root penetration and humus accumulation are regarded as causing the physical improvement.—*P. J. Olson.*

4441. ADAMS, A. B. The making of grass hay. Jour. Dept. Agric. Western Australia 2nd ser. 2: 326-328. 1925.—It is pointed out that loss in quality of hay during the past season was occasioned in large measure by one or both of the following factors: (1) The grass was cut too late; (2) the crop after cutting was left too long exposed to sun and weather. Practical suggestions are offered as to time of cutting, and method of curing.—*P. J. Olson.*

4442. ÅSLANDER, A. Utspädd svavelsyre som besprutningsmedel mot ogräs. [Diluted sulphuric acid as a spray for weeds.] (English summary.) Nordisk Jordbrugsforskning 1925: 126-146. Fig. 1-8. 1925.—Used at a rate of 90 gallons per acre 2% H_2SO_4 killed plants of *Sinapis arvensis* with 3-4 leaves, while plants which had wintered over in the field required a 5% solution. The acid penetrates into the plant, killing the protoplasm, and destroying the chlorophyll and chloroplasts. In winter-grown leaves the thick cell walls will absorb a considerable quantity of acid and the lower layers eventually escape killing. Barley, oats, and peas are protected by means of a wax coating; red clover, by hairs. The leaves of *Chenopodium album* are protected by glandular hairs, but the plants may be killed when the field is rolled previous to spraying, by which procedure the unprotected stems are killed. Added

to water culture H_2SO_4 in concentrations no stronger than 1-20,000 seems harmless.—*Ernst Gram.*

4443. AUDAS, J. W. A valuable swamp grass. *Glyceria* (Poa) *aquatica*, Wahlenb. "Water spear grass or reed meadow grass." Jour. Dept. Agric. Victoria. 23: 366-369. 3 fig. 1925.—Water spear grass (*Glyceria aquatica*) is relished by all kinds of stock. Fifty tons of green hay or 30 tons per acre of dry hay have been cut. Propagation by planting the roots is better than seed because the latter soon lose their vitality. This grass is superior to *Paspalum distichum* (silt grass), *Paspalum dilatatum* (golden crown grass), *Alopecurus geniculatus* (marsh foxtail grass), *Festuca gigantia* (tall fescue), and *Phalaris arundinacea* (reed canary grass).—*Wm. E. Lawrence.*

4444. B., C. A. Natal. The Third Congress, and animal transport. Internat. Sugar Jour. 27: 580-584. 1925.—The proceedings of the Third Annual Congress of the South African Sugar Association are reviewed, and a list is given of the subjects discussed as follows: Progress of work on streak disease, H. H. STOREY; Streak-disease control, C. J. RAPSON; Cane varieties suited to Natal conditions, H. H. DODDS; Chief field insect pests, VAN DER MERWE; Purchase of fertilizers, E. O. WILLIAMS; Best methods of applying fertilizers, BLEWETT; Principles involved in green manuring, C. EDELMANN; Application of green manuring to sugar cane in Natal, H. H. DODDS; Farm surveying, T. A. WARNER; Irrigation, C. A. RITCHIE; Animal transport on sugar estates, V. C. SCHWIKKARD.—Cane loaders and harvesting machines, the possibility of employing white labor, native contracts, and hygienic and cheap dwellings on estates were also discussed. The paper on animal transport on Natal sugar estates, including feeding, care and type of animals, is treated at length.—*Nellie E. Fealy.*

4445. BARTELS, L. C. Birchip fallow competition. Jour. Dept. Agric. Victoria 23: 336-339. 2 fig. 1925.—Fallow competitions demonstrate "that there is a very direct relation between the cultural methods of good farmers and the high yields they obtain."—*Wm. E. Lawrence.*

4446. BARTELS, L. C. Donald crop and fallow competition, 1924. Jour. Dept. Agric. Victoria 23: 85-92. 4 fig. 1925.—The successful use of copper carbonate as a fungicide for bunt is reported. Comments on the competing crops are also given.—*Wm. E. Lawrence.*

4447. BARTELS, L. C. Irrigation experiments. Jour. Dept. Agric. Victoria 23: 74-78. 4 fig. 1925.—The greater value of superphosphate, as a top-dressing for lucern, over that of insoluble phosphates was shown. The experiments were conducted at Swan Hill.—*Wm. E. Lawrence.*

4448. BARTELS, L. C. Lucerne top-dressing experiments. Jour. Dept. Agric. Victoria 23: 479-486. 5 fig. 1925.—"The highest yields are obtained when superphosphate is supplemented by an application of gypsum."—*Wm. E. Lawrence.*

4449. BARTELS, L. C. Maffra competitions, 1925. Jour. Dept. Agric. Victoria 23: 410-415. 1925.—Remarks on beet growing, the necessity of fertilizers, and on hay stack construction are given.—*Wm. E. Lawrence.*

4450. BARTELS, L. C., AND P. D. McRAE, Lindenow maize variety competition, 1924-25. Jour. Dept. Agric. Victoria 23: 731-737. 5 fig. 1925.—Variety tests with seed submitted by farmers and the importance of local seed selection are discussed.—*Wm. E. Lawrence.*

4451. BRANDON, J. F. Crop rotation and cultural methods at the Akron (Colorado) Field Station in the 15 year period from 1909 to 1923, inclusive. U. S. Dept. Agric. Dept. Bull. 1304. 1-27. 1925.—Under an average annual precipitation of 17.95 inches ranging from 25 inches in 1915 to 13.44 inches in 1921, it has been possible to produce average yields per acre of 12.8 bushels of winter wheat, 10.3 bushels of spring wheat, 22.4 bushels of oats, 20.3 bushels of barley, 14.6 bushels of corn, 2705 pounds of corn, 3663 pounds of Kafir, and 3694 pounds of Sorgho. The limiting factor in crop production has more often been the distribution rather than the amount of the precipitation.—Results from fallowing, green manuring, subsoiling, short term rotations, and various other cultural operations are given.—*Author.*

4452. CARNE, W. M. Sudan grass seed. Jour. Dept. Agric. Western Australia 2nd ser. 2: 346-347. 1925.—Attention is called to the very inferior quality of some of the samples of this seed obtained from various sources. Special mention is made of Thorn Apple and Bathurst Burr, as included with the impurities found.—*P. J. Olson.*

4453. CARNE, W. M., AND C. A. GARDNER. **Stinking roger.** Jour. Dept. Agric. Western Australia 2nd ser. 2: 405-406. 1 fig. 1925.—A description, including a full page drawing of the plant, is given. Its adaptation and distribution are briefly noted and methods of control suggested.—*P. J. Olson.*

4454. CARNE, W. M., AND C. A. GARDNER. **Wild or Spanish radish.** Jour. Dept. Agric. Western Australia 2nd ser. 2: 407-409. 1 fig. 1925.—This plant is described as a very serious weed pest on cultivated lands on the western coastal plain and in the wetter parts of the wheat belt. Suggestions are offered as to methods of control.—*P. J. Olson.*

4455. CARNE, W. M., C. A. GARDNER, AND A. B. ADAMS. **Trefoil, or bur trefoil.** Jour. Dept. Agric. Western Australia 2nd ser. 2: 381-382. 1925.—It is pointed out that this plant is especially valuable in the regions of warmer and drier climate. A taxonomic description and a drawing of the plant are included.—*P. J. Olson.*

4456. CHU, SHI CHANG. [Report on the cotton industry in the United States of America.] (Chinese.) Jour. Ministry Agric. and Commerce 11¹¹: 1-18. 1925.—The author has given a detailed account of cotton production in different parts of the U. S. A., and has discussed climatic conditions and cultural methods as well. Statistics of 10 years' production from the leading cotton producing states are presented in tabular form. The rural organizations and governmental interest in cotton improvement are also described.—*C. Y. Chiao.*

4457. COSTANTIN, J. **Un essai sur les pommes de terre montagnardes.** [A study of the potatoes of mountainous regions.] Compt. Rend. Acad. Sci. Paris 181: 633-636. 1925.—Potatoes were collected in Pralognan at an altitude of 1450 m. One lot was grown at the school of Agriculture, Grignon, the other at the Laboratory of Vegetable Biology, Fontainebleau. In the latter case neither leafroll nor mosaic appeared, though 2 of the 10 plants died, probably of *Rhizoctonia*. The experiments are not regarded as sufficiently extensive to demonstrate the advisability of securing seed tubers from the mountains to use on the plains.—*C. H. Farr.*

4458. DAVIS, JOSEPH S., AND ALONZO E. TAYLOR. **The world wheat situation, 1924-25.** A review of the crop year. Wheat Studies, Food Res. Inst. 2: 1-64. 17 fig. 1925-1926.—This review summarizes and interprets the more important phases of the world wheat situation for the crop year 1924-1925. For the various sections, there are discussed the supply position, the volume and course of international trade, the changing position of wheat stocks, the price movement, the volume of marketing, cooperative marketing, import and export restrictions and consumption, and causes and results of price fluctuations.—*R. Lee.*

4459. ELLIOTT, RAYMOND. **Comparative values of normal juice factors.** Internat. Sugar Jour. 27: 537-539. 1925.—The differences between cane weight on flume plantations and rail plantations are briefly discussed. The author describes his investigations, giving in tabular form available data, calculations using different normal juice Brix factors, and influence of rainfall on the normal juice, and sums up his conclusions on the importance of normal juice factors: (1) As far as the comparative value of the normal juice is concerned it is quite useless to compare factory against factory under existing conditions; if all factories were operating exactly alike the factor would be one of the most important figures that could be had in chemical control. (2) As long as flume cane factories calculate their cane weights and all use different normal juice factors their tonnage of cane per ton of sugar will not be comparable with those factories which weigh their cane. (3) The Java ratio is important as there is a direct relationship between the 2 figures. "More time, attention and thought should be given to this important subject and its value be frequently determined by all plantations on a uniform basis."—*Nellie E. Fealy.*

4460. FASSIG, OLIVER L. **Rainfall and temperature in Cuba.** Trop. Plant. Res. Foundation Bull. 1. 1-32. 1925.—In view of a contemplated study of the sugar cane production problems of Cuba, consideration is here "given to such weather factors as would influence the selection of suitable localities for field experimental stations, and to the gathering of data on the relation of weather to sugar cane production."—*Frederick V. Rand.*

4461. GILMORE, J. W. **Crop sequences at Davis.** California Agric. Exp. Sta. Bull. 393. 1-36. 1925.—With an annual rainfall of 20 inches or less, change of crops and the inclusion of a fallow period are important factors in the maintenance of high yields. Continuous crop-

ping decreases the yield of cereals; this decrease becomes greater with time and is especially marked during dry years. Yields decline as the length of the period between fallow years increases. Manure, if too coarse and if applied too abundantly, may be detrimental, especially during dry years. Green manures of peas and vetch maintain the yields of wheat at a high level, but during dry years too much green manure can be added for the best results.—A. R. C. Haas.

4462. HARDENBURG, E. V. A study, by the crop survey method, of factors influencing the yield of potatoes. New York [Cornell] Agric. Exp. Sta. Mem. 57. 1143-1279. Fig. 125-153. 1922.—The crop survey method of studying and measuring the influence of various environmental and cultural factors on the yield of potatoes was applied to 1290 farms in 6 counties of New York State. The principal factors studied in respect to influence on yield were elevation; soil type; time and depth of plowing; value, type and method of applying manure and fertilizer; varieties; source, preparation and type of seed; methods of planting; methods of cultivation; and spraying. Harvesting and storage methods were also studied. The influence of each of these factors on yield was measured both by the analysis of the tabulated data and by the biometrical method to obtain the coefficient of correlation, r , with its probable error. For comparison with the survey results and to test the latter as a method of research, a complete review of American Experiment Station literature pertinent to this study is included. Both biometrical and tabulation studies showed that amount of seed planted per acre and total value of manure and fertilizer used were most influential on yield. Second to these in influence were depth of plowing, frequency of cultivation, and frequency of spraying. The coefficient, r , was negative only for frequency of cultivation on Long Island; 5 coefficients out of 18 were too small to be significant, the probable reasons being explained.—The author concludes that, although the survey cannot be used as a substitute, it can and should play a more prominent part in supplementing experiments. For the sake of reliability of results from such survey studies as this, not less than 300 and preferably 400 records should be used.—Author.

4463. HARLAN, HARRY V., MARY L. MARTINI, AND MERRITT N. POPE. Tests of barley varieties in America. U. S. Dept. Agric. Dept. Bull. 1334. 1-218. Pl. 1-3, fig. 1-9. 1926.—This bulletin was intended to include records of all the plat yields secured at the experiment stations in Canada up to and including 1915, and in the U. S. A. up to and including 1921. The varieties are identified as far as possible and a short outline of the history of barley growing is included. Since the methods of testing have been constantly improving, only general conclusions are deduced from the early results. The regional adaptations of the varieties are discussed from the standpoint of yields, and the history and a brief tabular description of each variety are presented. Better varieties for the period 1917 to 1921 are listed separately, both by stations and varieties.—H. V. Harlan.

4464. HARRISON, J. E. Rupanyup crop and fallow competitions, 1924. Jour. Dept. Agric. Victoria 23: 218-226. 5 figs. 1925.—The hoary cress (*Lepidium draba*) and the bladder soapwort (*Saponaria vaccaria*) are reported as bad weeds in this section.—Wm. E. Lawrence.

4465. HASKELL, SIDNEY B. The service of state-supported agricultural research. Sci. Monthly 21: 573-580. 1925.—Examples are given to show the need for publicity in bringing before the public the service of state agricultural stations.—A. M. Taylor.

4466. HENDRY, G. W., AND F. W. WOLL. I. Cereal hay production in California. II. Feeding trials with cereal hays. Univ. California Agric. Exp. Sta. Bull. 394. 1-71. 1925.—A study of the yields of certain cereal hays in California and palatability and nutritive value of barley, wheat and oat hay as determined in feeding tests with dairy cattle.—The degree of maturity when cut affects the yield, palatability and the chemical and physical composition of cereal hay. Immature wheat hay cut in the "blossom" was more palatable to dairy cattle than when cut at later stages of development. Barley, wheat and oats should be cut in the "milk" when intended for dairy cattle or saddle horses and in the "soft dough" when intended for work horses, mules or stock. Rye should be cut in the "blossom" or earlier for all purposes.—A. R. C. Haas.

4467. HILSON, G. R., V. RAMANATHA AYYAR, AND R. CHOKKALINGHAM PILLAI. Bud and boll-shedding in cotton. Agric. Res. Inst. Pusa Bul. 156: 1-34. Fig. 1-8. 1925.—This paper

reports studies preliminary to a detailed investigation of bud and boll-shedding, restricted to cotton plants of the Cambodia variety (*G. hirsutum*) and crosses between this and Bourbon (*G. purpurascens*). It was found that bud shedding is most common when the plants are very young. Boll-shedding begins very shortly after flowers appear but does not become serious until after the growth of the plant has begun to slow down. Curves plotted to show the rate of shedding of buds and bolls tend to synchronize with one another; this is taken to indicate that the same underlying cause is at work in both cases. It was found that the majority of the buds and bolls shed were apparently unaffected by any pest or disease.—*H. M. Jennison.*

4468. HOFFMAN, I. C. The relation of size of kernels in sweet corn to evenness of maturity. Jour. Agric. Res. 31: 1043-1052. Fig. 1. 1925.—The large and small kernels of sweet corn germinate and the seedlings come up at about the same time. The seedlings from the large kernels are nearly always larger than those from the small ones, usually remain so, and grow more rapidly and become established in the soil more quickly. Plants from large kernels reach the tasseling, pollen-shedding, full-silk, and canning stages about 5 days before those from small kernels. Sweet corn for canning purposes should be graded. The large and small kernels should be planted separately. No difference was found in the size of kernels produced on the ears from large seed and those from small. There was a larger number of 2-eared stalks among those from the large kernels than from the small ones. More barren and unproductive stalks were found in the plot planted with small kernels than in that planted with large ones.—*From Author's Summary.*

4469. HOPPER, T. H. Composition and maturity of corn. North Dakota Agric. Exp. Sta. Bull. 192. 1-76. 7 pl., 18 fig. 1925.—Eighteen varieties were grown in 1920 under comparable conditions, harvested at 5 different stages (tassel, milk, dough, glazed and ripe) and chemical analyses made to determine the proportion of dry matter, ash, crude protein, fiber and nitrogen free extract at different stages of maturity.—The author states that the life of the corn plant may be divided into 2 definite periods. The 1st (planting to tassel) is variable according to environmental conditions, and to earliness or lateness of variety. The 2nd (tassel to glazed) is quite constant and independent of environmental conditions, and of earliness and lateness of variety. According to data presented, the duration of the 1st period varies from 57 to 81 days, and of the 2nd from 38 to 47 days in different varieties.—*P. J. Olson.*

4470. HOWE, H. E. The chemical alcohol. Scientific Monthly 21: 249-252. 1925. There are many alcohols which come from many raw materials. The greatest production of commercial alcohol is of the ethyl variety from waste molasses and potatoes. Alcohol is second only to water as a solvent. About 50 other uses are mentioned. Synthetic methanol seems likely to displace the natural product.—*A. M. Taylor.*

4471. HUMPHRIES, A. E., AND ROBT. HUTCHINSON. Further report on the quality of Yeoman II. Jour. National Inst. Agric. Botany 4. 32-42. 1925.—This is a continuation of the report of July 3, 1925, and gives the results of detailed studies on the quality of Yeoman II wheat grown at 8 agricultural experiment stations as compared with selected Yeoman or some standard variety.—*H. L. Westover.*

4472. KEEN, B. A. Physics in agriculture. Nature 116: 905-907. 2 fig. 1925.—A brief discussion and illustration is given of the Odén-Keen automatic recording balance. An illustration of the variation in drawbar pull on a supposedly uniform field is shown. These variations are stated to be quite constant from season to season.—*O. A. Stevens.*

4473. LANDER, P. E. The Experimental Sullage Farm, Lyallpur. Agric. Res. Inst. Pusa Bull. 157. 1-25. 1925.—An account of the operations carried on for 6 years at a sullage farm at Lyallpur, India. Green fodders, vegetables, sugarcane and other crop plants where a forced vegetative growth is desired appear to be best adapted for treatment with sullage. Wheat appears to be unsuited for treatment with sullage.—*H. M. Jennison.*

4474. MARQUAND, C. V. B. [Rev. of: COPELAND, E. B. Rice. Macmillan & Co.: London, 1924.] Kew Bull. 1924: 304. 1924.—An appreciative account of a work dealing with rice as cultivated in the U. S. A. and the Philippines, with a short account of rice culture in other lands.—*T. J. Fitzpatrick.*

4475. MARTIN, JOHN H., AND CLYDE E. LEIGHTY. Experiments with emmer, spelt, and einkorn. U. S. Dept. Agric. Dept. Bull. 1197. 1-57. Pl. 1-3, fig. 1-3. 1924.—Eight varieties of emmer, 5 of spelt, and 2 of einkorn are described. Of these, Vernal (White Spring), Khapli and Black Winter emmer and Alstroum and White Spring Spelt are grown on farms in the U. S. A. Vernal emmer is the most productive and important variety and is grown principally in South Dakota, North Dakota and Nebraska. Yields obtained from the varieties of emmer, spelt or einkorn, grown at 52 experiment stations in the U. S. A. and Canada are presented in comparison with the yields of the leading varieties of barley and oats. On the basis of these results, winter emmer should not be grown in any part of U. S. A. or Canada because of its low yields and lack of hardiness. Spring emmer should not be grown except possibly to some extent in North Dakota, eastern South Dakota and southern Minnesota, for the purpose of increasing crop diversification. In all sections of these states, it is outyielded on the average by barley or oats or both. Even under conditions where rust and drought are of common occurrence, emmer does not compare favorably with barley and oats.—Winter spelt is more productive than barley and oats in a portion of Maryland and Virginia. Emmer should be sown $1\frac{1}{2}$ -3 inches deep at the rate of 6-8 pecks per acre. Winter emmer should be sown at about the same time as winter wheat, and spring emmer about as early as sowing is practicable.—*J. H. Martin.*

4476. MATTHEWS, F. Crops for silage. Agric. Gaz. New South Wales 36: 849-850. 1925.—As a result of 2 years' trial, Sunrise oats is given 1st place as a silage crop. Crops tried were Sunrise oats and Gresley wheat, alone and in combination with different varieties of field peas, and different varieties of rye, wheat and barley.—*L. R. Waldron.*

4477. MOODIE, A. W. S. Agricultural seeds from overseas. Agric. Gaz. New South Wales 36: 877-878. 1925.—Small samples of seed of Sudan grass, sorghum, beet, alfalfa, cabbage, cress, fescue, parsley, lettuce and cucumbers were tested after storage in tank room, store room, and cabin, during an overseas voyage. Tank room temperatures were below freezing; store room, 73-119°F.; and cabin, 58-86°F. Marked decreases in viability did not occur in most instances. Best results followed storage at low temperature; 2nd best storage at high temperature; and 3rd storage at medium temperature.—*L. R. Waldron.*

4478. MUKERJI, J. N. The quality and yield of tobacco as influenced by manurial and other operations. Mem. Dept. Agric. India, Chem. Ser. 8: 1-26. 1925.—This comprises studies of (1) the effect of a variety of manures and fertilizers on the yield, quality and nicotine content of tobacco plants, (2) the effect of such operations as "topping" and "spiking" on the yield and quality of the plants, and (3) the changes occurring during the process of curing by the ordinary country method and by the so-called "rack-curing" method.—*J. Sen.*

4479. MULLETT, H. A. Geelong farm competition, 1923. Jour. Dept. Agric. Victoria, Australia 22: 21-36. 1924.—The object of the competition is to promote better farming methods, farm management and more effective improvements, and to secure improvement of the farm environment generally. Four classes were open for competition: (A) Mixed farms, 100 acres or over whose principal source of revenue is from cereals and sheep; (B) mixed farms, 100 acres or more, whose principal source of revenue is from dairying, pig-raising, orcharding, etc.; (C) mixed farms under 100 acres in area; and (D) farms owned by returned soldiers, and settled under the Repatriation Scheme. The system of farming practiced by the winner in each class is given in detail, with the reasons for awards.—*H. L. Westover.*

4480. MULLETT, H. A. Numurkah fallow competition, 1925. Jour. Dept. Agric. Victoria 23: 456-459. 1925.—Deep, and early plowing of fallow land produces highest yields.—*Wm. E. Lawrence.*

4481. MULLETT, H. A. Rupanyup fallow competition. Jour. Dept. Agric. of Victoria. 22: 425-427. 1924.—These various competitions were inaugurated to promote better farming methods and to increase the yields of wheat, and it is believed that they have been very effective. In each of these articles the problems of the district are stated, following which there are is a more or less general discussion of the competition and the results accomplished. The awards are cited and reasons for making them given. Each farm receiving an award is described in detail, especial attention being given to the manner in which the fallow is handled and to the condition of the crop.—*H. L. Westover.*

4482. MULLETT, H. A. **Subterranean clover** (*Trifolium subterraneum*). Jour. Dept. Agric. Victoria 23: 705-715. 5 fig. 1925.—Subterranean clover is advocated as a valuable plant for pasture in regions with 20 inches of rainfall and over, though it succeeds best with an annual precipitation of 30-40 inches. It has come recently into prominence as a forage plant where white, alsike, and red clovers do not thrive. Subterranean clover is an annual, introduced from Europe, which will grow on a variety of soils and set seed remarkably well. No matter how severely grazed, the plant is said to produce enough seed to replant and to maintain the cover. Methods of establishing the stand and of harvesting the seed are also given.—*Wm. E. Lawrence.*

4483. MULLETT, H. A. **Walpeup fallow competition, 1925. Arranged by the Walpeup Branch of the Victorian Farmers' Union.** Jour. Dept. Agric. Victoria 23: 398-401. 1925.—The Mallee country lying between Ouyen and Murrayville was once a scrubby desert left in an apparently useless condition by cattle and sheep grazing in an almost waterless region. With less than 14 inches of rainfall, and drought reverses the country was abandoned until the coming of the railroad and water in 1909. In 16 years, rough methods of the pioneer settler have cleared the land and transformed it into a profitable wheat growing section. At first the settler was fortunate to get back his seed, but the burning of the stubble killed the young Mallee shoots. Now there are 450 introduced weed species, while the "take all" and flag smut flourish in a country once free from weeds and plant diseases.—*Wm. E. Lawrence.*

4484. MULLETT, H. A. **Wheat experiments at Salisbury.** Jour. Dept. Agric. Victoria 23: 328-332. 4 fig. 1925.—A report upon varietal tests with wheat and oats, and of fertilizer tests with wheat.—*Wm. E. Lawrence.*

4485. MULLETT, H. A. **Wheat experiments, Western district.** Jour. Dept. Agric. Victoria 23: 333-335. 1925. These experiments show that it is more profitable to use 2 than 1 hundredweight of superphosphate on wheat. Gypsum is recommended for the stiff clays of Willaura, while basic phosphate is inferior to superphosphate. Federation, Turvey and Gallipoli were the best varieties.—*Wm. E. Lawrence.*

4486. MULLETT, H. A. **Wheat growing in the Goulburn Valley.** Jour. Dept. Agric. Victoria 23: 394-397. 1925.—Twelve recommendations are made by the Victoria Department of Agriculture for wheat growing in this valley.—*Wm. E. Lawrence.*

4487. MUNERATI, O. **Existe-t-il une après-maturation chez les céréales récemment récoltées?** [Does there exist an after-ripening in freshly harvested cereal grains?] Compt. Rend. Acad. Sci. Paris 181: 1081-1083. 1925.—Eleven varieties of wheat were germinated at 4 different temperatures. In all cases germination was 90% or above at 6-7°C. and except in one case of 13%, below 6% at 30-32°. At 12-14°, there is considerable variation among varieties, some showing a germination of 23 and others of 100%. It is concluded that no after-ripening exists in wheat, that germination is dependent on temperature, and that varieties present hereditary differences with respect to the optimum temperature for germination. It is believed that the fresh seed of all cereals may be germinated at low temperatures.—*C. H. Farr.*

4488. MURPHY, H. F. **Rotation vs. continuous culture.** Oklahoma Agric. Exp. Sta. Bul. 145. 1-7. 1 fig. 1922.—A report of a series of experiments in which continuous cropping to oats is compared with oats grown in a rotation consisting of oats, cowpeas, darso and cotton.—These experiments were conducted on soil varying from a loam to a silt loam, classified as belonging to the Kirkland series. The results obtained for about a 5-year period indicate the following: Continuous cropping to oats is not advisable. Straw may be used profitably in connection with continuous cropping. The use of manure is profitable whether used in connection with continuous cropping or a rotation. Manure has produced greater yields than crop residues whether used with continuous cropping or a rotation. A crop has been more effective in maintaining the yield of oats than has manure when used in the continuous cropping system. The crop rotation has produced an average acre yield of 7.31 bushels more oats than continuous culture. The best system studied was manure used in connection with a crop rotation. This system produced an average acre yield of 8.7 bushels more oats than resulted from continuous cropping. Considering the approximately 1,500,000 acres of oats grown annually in the State, and basing the calculations on the figures presented, a rotation

would mean over \$4,000,000 to the farmers of the State each year over continuous cropping, after deducting the extra cost of threshing and hauling incident to the increase in yield. Another \$1,000,000 could be added yearly by using manure in connection with the rotation.—*T. R. Stanton.*

4489. PARKER, WILFRED H. Report on maturity and yield trials of first early potatoes, 1924. *Jour. National Inst. Agric. Botany.* 4. 51-70. 1925.—Detailed data are given on maturity and yield of 9 varieties of first early potatoes in 1924, the trials being conducted at 4 agricultural experiment stations. These tests are a continuation of those of 1923.—*H. L. Westover.*

4490. PARKER, WILFRED H. Report on trials of four new barleys 1921-23. *Jour. National Inst. Agric. Botany* 4. 1-23. 1925.—Detailed data are given on yields and quality of 4 new varieties of barley grown in comparison with a standard variety at 4 agricultural experiment stations in 1922 and 1923.—*H. L. Westover.*

4491. PARKER, WILFRED H. Report on trials of four new barleys, 1924. *Jour. National Inst. Agric. Botany* 4. 24-26. 1925.—A brief report on yields and quality of varieties of barley grown at the Norfolk Agricultural Experiment Station. This is a continuation of the trials of 1922 and 1923.—*H. L. Westover.*

4492. PARKER, WILFRED H. Report on trials of six varieties of spring oats, 1923-24. *Jour. National Inst. Agric. Botany.* 4. 43-50. 1925.—A detailed report on yields and quality of 6 varieties of oats: Abundance, Victory, Supreme, Potato, Black Tartarian, and Superb, each variety being grown at 4 agricultural experiment stations.—*H. L. Westover.*

4493. PARKER, WILFRED H. Report on trials of Yeoman II wheat, 1923-1924. *Jour. National Inst. Agric. Botany* 4. 27-31. 1925.—A detailed report on yields of Yeoman II wheat as compared with some other standard variety during the season of 1923-1924 at 8 agricultural experiment stations.—*H. L. Westover.*

4494. PORTER, R. H. Cultivation of the foreign potato in China. *Univ. Nanking, Coll. Agric. and Forest. Misc. Ser. Bull.* 6. 1-8. 1925.—This bulletin presents the fundamentals of potato culture as they have been worked out in the U. S. A. It covers the following factors in their relationship to potato growing: Climate, kind of soil, soil preparation, crop rotation, fertilizers, seed selection, time and method of planting, cultivation, irrigation, and harvesting and storing. It also discusses briefly the most common diseases and insects of the potato, together with measures for their control. The bulletin is in simple Chinese for use of farmers.—*Author.*

4495. PRESCOTT, J. A. La volatilisation de l'ammoniaque du sulfate d'ammoniaque et la réaction du sol. [Volatilization of the ammonia in ammonium sulphate and the soil reaction.] *Bull. Inst. Egypte* 5: 201-208. 1923.—Field experiments with maize at the Bahtim Experimental Station indicate that under certain conditions $(\text{NH}_4)_2\text{SO}_4$ can be made to give results equivalent to those obtained with nitrate fertilisers. This is associated with a rapid rate of nitrification and a rapid intake of N by the crop. Lower efficiencies were obtained when the fertilizer was applied to the soil before seeding time. This lower efficiency was traced to the liberation of NH_3 from the fertiliser in contact with an alkaline soil. This liberation is shown by laboratory tests to be roughly proportional to the hydroxyl ion concentration of the soil.—*Author.*

4496. RAMSAY, J. T. Potato experiments, 1924-25. Results at Milbrook. *Jour. Dept. Agric. Victoria* 23: 467-471, 618-621. 1925.—Not over 3 hundredweight per acre of superphosphate should be used on red volcanic soil. Other soils require more fertilizer. Just why potatoes harvested before maturity give better results is not known. Varietal tests are also reported.—*Wm. E. Lawrence.*

4497. RAMSAY, J. T. Potato production under irrigation. *Jour. Dept. Agric. Victoria* 22: 355-360. 1924.—The development of irrigation in Victoria has resulted in more attention to the production of potatoes and other crops. The author enumerates a number of reasons why it is not possible to follow any set rule for the time and number of applications of water to the potato crop. Attention is called to the fact that climatic and soil conditions are the governing factors. It is suggested that a moist, not wet, condition of the soil from time of planting until past full bloom, is ideal. On the Werribee settlement planting in an average

season can be commenced with safety at the end of July, but in the northern part of the state it is usually not safe to begin planting before the first of September. Spring frosts are the controlling factor here. Special emphasis is laid on proper grading of the land. The rows are usually spaced at 27 inches with sets 14-15 inches apart in the row. It is recommended that 20-26½ bushels of seed be planted per acre. Suggestions are given for the fertilization and cultivation of the crop. From 5 to 8 chains (20 to 32 rods) is regarded as the most effective length for water to run. Numerous recommendations are made governing application of water, and the vital importance of cultivation after each application is stressed.—*W. Stuart.*

4498. RICHARDSON, A. E. V. **Wheat and its cultivation.** Jour. Dept. Agric. Victoria 22: 65-76, 2 maps; 129-157, 1-17 fig.; 271-281, 2 fig.; 335-414, 9 fig.; 449-473, 4 fig.; 600-614, 6 fig.; 645-678, 8 fig.; 730-742, 8 fig.; 1924; 23: 1-12, 3 fig.; 158-171, 7 fig.; 193-204; 257-266, 1925.—This series of articles deals in detail with the whole question of wheat from the standpoint of the world's supply and Australia's part therein, soils, structure and development of the wheat plant, cultivation, crop rotation, manuring, seeding, bunt control, harvesting, diseases, wheat improvement (breeding), wheat varieties, marketing, climatic relations and a survey of the general factors for successful wheat cultivation.—The Antarctic rains from April to October control Australia's wheat production. There has been a steady increase from 0.8 to 2.07 bushels per inch of rainfall over a period of 30 years, in the Wimmera. The increased production has been due, 1st, to superphosphate; 2nd, to the introduction of Federation wheat; 3rd, to summer fallowing associated with sheep; and 4th, to late seeding. Each step marks an advance over the preceding crops and a further increase in the use of superphosphate is now recommended. Efficient implements, good management and business ability are the final factors in successful wheat growing.—*Wm. E. Lawrence.*

4499. ROSENFELD, ARTHUR H. **The BH-10(12) and SC-12(4) canes.** Some observations on these two promising varieties in the West Indies. Jour. Dept. Agric. Porto Rico 9: 215-247. 24 pl. (2 col.), 10 fig. 1925.—These canes, both produced from the same parent, B-6835, by Jno. R. Bovell, Director of Agric. Barbados, are undoubtedly the 2 most popular varieties in Porto Rico and are rapidly replacing older standard varieties, particularly on the south coast where optimum conditions are encountered and where around 50% of the total cane area is now planted to them. In the British West Indies experiments carried on for many years have demonstrated the superiority of the B. H. to the standard cane heretofore usually grown in those islands, the White Transparent, corresponding to the Cristalina of Porto Rico and Cuba, while S. C.-12(4) has given consistently the best results of any variety tried out on Saint Croix (American Virgin Islands). Both of these varieties have of late years been taken to Cuba and to Santo Domingo and are giving considerable promise. All around the coastal plain of Porto Rico it is difficult to choose between these 2 varieties, which have given results superior to all other canes compared, including Cristalina, Louisiana Striped and Purple, B-208, D-109, etc. In the hills between Humacao and Caguas the preponderance of evidence obtainable would indicate that SC-12(4) is slightly more at home under the conditions of that particular section than Barbados Hybrid. A list of 26 references is given.—*Mel. T. Cook.*

4500. SALMON, S. C., C. O. SWANSON, AND C. W. McCAMPBELL, **Experiments relating to the time of cutting alfalfa.** Kansas Agric. Exp. Sta. Tech. Bull. 15: 1-50. 1925.—Cutting in the bud stage markedly decreased the vigor of growth, the stand and the yield of alfalfa hay and permitted the encroachment of grasses. Allowing the plants to reach full-bloom stage before cutting maintained the vigor and stand to a satisfactory degree for eight years. Leaf spot caused more damage in these plots than in those cut more frequently, but in spite of this, cutting in full bloom produced the highest yield of hay. Results were obtained with respect to yield on the effect of cutting off new shoots, allowing plants to produce seed before cutting and frequency of cutting. Chemical analyses of the hay show that ash and protein content expressed as a percentage, decreased as cutting was delayed. The crude fiber was least for the bud stage and increased with delay in cutting. The way the hay was cured seemed to have an effect on the percentage of pure protein as compared with the total crude protein. Feeding tests conducted for 3 years showed that the feeding value of alfalfa hay decreased with delayed cutting, the best hay for feeding beef steers being that cut in the bud stage and the poorest, that allowed to reach the seed stage.—*L. E. Melchers.*

4501. SHANTZ, H. L. **Agriculture in East Africa.** [In: JONES, THOS. JESSE. **Education in East Africa.**] P. 353-401. Edinburgh House Press: London, 1925.—The region considered includes Ethiopia (Abyssinia), Kenya, Uganda, Tanganyika, Zanzibar, Portugese East Africa, Northern Rhodesia, Southern Rhodesia, and Bechuanaland. The topography, climate, soil, natural vegetation, characteristics of the natives, and agricultural possibilities of this region are discussed. The agricultural products are enumerated and the agricultural practices of the natives in respect to the commercial development of this part of Africa are analyzed. An outline is presented of what the agricultural education of natives should be and a table is given showing the types of indigenous vegetation in the different provinces or countries. Classification of the land into grazing lands, lands capable of crop production, those which would produce warm climate crops, cool climate crops and forests are given for each country, the different classes being plainly outlined on maps. A general plan for an agricultural development program is given.—*H. N. Vinall.*

4502. SLOSSON, EDWIN E. **Sugar from sunflowers.** *Scientific Monthly* 20: 659-661. 1925.—Levulose, a third sweeter than sucrose, can be made from Jerusalem artichoke at a cost as low as or lower than the present cost of cane or beet sugar.—*A. M. Taylor.*

4503. SMALLFIELD, P. W. **The mowing of pastures and manipulation of the grass-mower.** *New Zealand Jour. Agric.* 31: 104-103. 1925.—Due to the fact that most dairy farms are understocked, the pasture growth becomes so rank during summer that white clover is stunted and grass sward develops a tufted condition, leaving bare spots. Summer mowing before the rank growth has checked white clover, is recommended for improving pastures. Care of the mower is discussed.—*H. L. Westover.*

4504. SQUIRE, M. J. E. **Farmers' experiment plots. Maize trials, 1924-25. Upper north coast district.** *Agric. Gaz. New South Wales* 36: 861-863. 1925.—Several corn trials were conducted upon 4 private farms. The maximum yield was 109 bushels from Large Red Hogan.—*L. R. Waldron.*

4505. THOMAS, I., AND J. H. LANGFIELD. **Mulching experiment.** *Jour. Dept. Agric. Western Australia* 2nd ser. 2: 364-366. 1925.—This experiment at the Chapman and Merredin experiment farms was carried on for the purpose of determining to what extent and under what conditions cultivation of winter fallowed land is profitable. Three treatments were compared as follows: (1) Several cultivations throughout the season (5 at Chapman and after each rain of 25 points or more at Merredin); (2) 1 cultivation, in August at Chapman and in September at Merredin, and no further cultivations until immediately before seeding; and (3) no cultivation until immediately before planting. The hay yields for 1924, considering number 2 as 100 ranked respectively 108, 100, and 75 for Chapman, and 109, 100, and 98 for Merredin. On account of fire no grain yields were obtained at Chapman, but at Merredin they ranked 116, 100 and 105.—*P. J. Olson.*

4506. THOMAS, R. G. **Wangaratta crop and fallow competition, 1925.** *Jour. Dept. Agric. Victoria* 23: 407-410. 1925.—The 3 prerequisites to the preparation of good fallows are early fallowing, deep plowing, and very little use of disc-cultivator. The rigid-tynd cultivator is recommended.—*Wm. E. Lawrence.*

4507. VIDAL, D. **Sur les rotations de cultures complementaires de la vigne dans le Bas-Languedoc.** [Rotations of complementary vineyard crops in the Bas-Languedoc.] *Prog. Agric. et Vitic.* 73: 156-161. 1920.—Results are given of several years' trials with sowings of rye-grass, lupuline, clover, sainfoin, etc. There are also tables showing results obtained in the years 1910-1911 by the Agricultural School, with different varieties of beets and corn.—*Grace M. Weston.*

4508. WARD, F. E., AND A. W. HUDSON. **Pasture top-dressing in Canterbury.** *New Zealand Jour. Agric.* 30: 393-402. 1925.—The results from top dressing pastures and meadows with various fertilizers are given in detail. The fertilizer treatments consisted of superphosphate and basic superphosphate, each alone and each in combination with blood. In every case (1 exception) the cost of fertilizers was more than repaid by the increase in 1 crop of hay. In the main, addition of blood to the phosphates did not increase yield.—*H. L. Westover.*

4509. WENHOLZ, W. **Varieties of maize in New South Wales.** *New South Wales Dept. Agric. Farm. Bull.* 152. 3-86. 58 fig. 1925.—Varieties are classified on the basis of maturity

and type. A total of 83 varieties are described with regard to plant, ear, and kernel characters. Many of them are figured.—*L. R. Waldron*.

4510. WILLS, L. A. **Ten years of sugar refining.** *International Sugar Jour.* 27: 576-579. 1925.—A brief outline is given of the progress made in raw sugar washing, liquor and bone char filtration, evaporation, refined sugar centrifugals, drying and screening, picking and other handling, and in the laboratory.—*Nellie E. Fealy*.

SOIL SCIENCE (EDAPHOLOGY)

4511. ANONYMOUS. **How to mix fertilizers.** *Jour. Dept. Agric. Western Australia* 2nd ser. 2: 361. 1925.—A brief note including a diagram on important points to be taken into consideration in mixing of different manures.—*P. J. Olson*.

4512. ANHEUSER, EBERHARD. **Spent hops as a fertilizer and amendment for heavy soils.** *Bull. Green Sect. U. S. Golf Assoc.* 5: 257. 1925.—Spent hops from the brewing industry after being kept in a moist pile for 3-4 years, becomes a mass of fibrous material having the composition: nitrogen 5.55%, phosphoric acid 0.34%, potash trace. It has a pH value of 4.7 and a total acidity (expressed as lactic acid) of 0.4%. When used as top dressing on a very stiff clay soil it greatly improved the friability and resulted in obtaining a fine stand of grass.—*L. W. Kephart*.

4513. BARBOUR, GEORGE B. **The loess of China.** *China Journal of Science and Arts* 38-39: 454-463, 509-519. 7 pl., 4 fig. 1925.—Information from many sources as a basis for more complete scientific study.—The loess of China is strongly developed throughout the Yellow River Basin and other parts of Chihli, Shansi, Shensi, Honan, Kansu, and Shantung Provinces, and to a lesser degree in the provinces of Anhwei and Kiangsu. The terms "Hwang-tu" or "loess" have been used in China to include several other similar deposits. Some such beds older than the true loess are, (1) Hipparion beds of red clay showing local stratification with gravel beds, often concretion-bearing, of late Miocene or early Pliocene Age; (2) Kansu continental deposits of red sands and gravels, Pliocene Age; (3) San Men Beds of sand and gravel carrying freshwater bivalves (*Quadrula*) and a number of very small gastropods, probably early Pleistocene; and (4) Sankanho Beds rather rich in silicified bones and other non-marine fossils not yet thoroughly studied.—The beds later than the true loess include re-deposited loess of sand and gravel beds with layers of loess containing animal remains showing a distinctly later epoch and change of climate, and alluvium deposits of rivers of the present cycle. The true loess thus probably corresponds in time to the later stages of the Pleistocene Ice Age. The loess originated in the vast arid plains of Central Asia whence it has been brought by wind. The question of its vertical cleavage, illustrated in many photographs and sketches, is left unsettled.—Tables of chemical analyses show that the peculiar characteristics of loess soil are due to its physical rather than its chemical properties. The microscope reveals a wide variety of mineral fragments, many finer than silt. Their sharp angularity and fresh undecomposed condition are outstanding features. In fertility, water supply is a vital factor. In water-absorbing capacity, the loess soil is similar to sandy alluvial soil. Its fine texture, combined with low clay content, creates a porous soil both light to till and easily penetrated by water. The presence of lime and other fresh unweathered soluble minerals make readily available much material for plant nourishment. A bibliography of 14 titles is appended, including original scientific contributions and summaries of results of research.—*Leonard H. Caldwell*.

4514. BOULANGER, E. **Reserches expérimentales sur la fabrication des nitrates par l'oxydation biochimique de l'ammoniaque.** [Experiments on the manufacture of nitrates by the biochemical oxidation of ammonia.] *Ann. Inst. Pasteur* 36: 305-338. Fig. 1. 1922.—A semi-commercial process and apparatus for the manufacture of nitrates ($\text{Ca}(\text{NO}_3)_2$ and NH_4NO_3) from the oxidation of $(\text{NH}_4)_2\text{SO}_4$ by nitrifying microorganisms are described. The bacteria were not used in pure culture; soil was used as inoculum.—*A. G. Plakidas*.

4515. BURGER, HANS. **Waldbodenphysik und Stockrodung.** [Forest soil physics and stump grubbing.] *Zeitschr. Forst.- u. Jagdw.* 56: 451-461. 1924.—The question of forest soil quality is governed by physical and not chemical considerations. Forest management, therefore, cannot benefit from agricultural experience. Clear-cutting, stump grubbing, soil

preparation, and reforestation with pure stands of conifers are the cause for the evil soil conditions prevalent in Germany. Shallow rooting and slow growth in youth which prevail on natural forest soils will eventually produce better stands of pine than quick and deep rooting and rapid growing trees which are secured as a result of soil preparation. Many evils attributed to source of seed may be laid to unnatural soil treatment. The problem of successful forest management in the future demands a study of the natural conditions affecting growth and their imitation and support.—*J. Roesser*.

4516. COTTRELL, F. G. **Fertilizer from the air.** *Scientific Monthly* 21: 245-249. 1925.—Bacteria were formerly the chief agents for transforming nitrogen of the air into compounds available to green plants. Now nitrogen compounds are also produced by the cyanamid process and the new German or Haber process. The latter has already superseded the former and produces approximately 70% of the fixation product.—*A. M. Taylor*.

4517. GOLDSCHMIDT, V. M. **Hvorpaa faar planterne sit kali?** [Where do plants get their calcium?] *Tidsskr. Skogbruk* 39: 97-105. 1922.—Biotite and muscovite, especially the former, in which Norwegian mountains abound are a very important source of calcium. They weather much more rapidly than feldspar.—*W. H. Meyer*.

4518. GREVE. **Zur Stubbenrodefrage auf Talsandböden.** [The stump-grubbing problem on sandy bottom soils.] *Zeitschr. Forst.- u. Jagdw.* 56: 304-306. 1924.—Under normal conditions, stump grubbing is not recommended as a measure to improve the soil condition. Experience in Holland with artificial soil preparation by deep ploughing has indicated that after rapid early growth trees gradually lose vigor, because of the transition from loose soil to soil in situ. Under present economic conditions when stump wood is needed for fuel, treatment of the soil according to Hilf's suggestions (*Ibid*, October, 1923.) is recommended with the immediate planting or sowing of stump holes with hardwoods.—*J. Roesser*.

4519. GUITTONNEAU, G. **Sur la transformation du soufre en sulfate par voie d'association microbienne.** [Transformation of sulphur into sulphate through microbic association.] *Compt. Rend. Acad. Sci. Paris* 181: 261-262, 1925.—The author has previously found that microorganisms can change metallic sulphur into hyposulphites. It is now discovered that the latter can be converted into sulphates in the same way; this reaction is, however, performed by a different organism or set of organisms, as is shown by the effect of ammonium succinate, which favors the accumulation of hyposulphites, but hinders the development of the organisms that change these into sulphates.—*C. H. Farr*.

4520. HARPER, HORACE J. **The ammonia content of soil, and its relation to total nitrogen, nitrates and soil reaction.** *Jour. Agric. Res.* 31: 549-553. 1925.—No correlation was found between the total N content of soil or the soil reaction and the amounts of NH_3 found in them. Large amounts of NH_3 were usually accompanied by a high nitrate content, but a high nitrate content did not mean that the soil contained large amounts of NH_3 . Unfavorable conditions for nitrification, low temperature and high acidity resulted in some increase of the NH_3 content of soils. The chief factors which influence the accumulation of NH_3 in soils are the rate of protein hydrolysis and the rate of nitrification.—*Author*.

4521. NEMEC, ANTONIN, AND KAREL KVAPIL. **Biochemische Studien über die Azidität der Waldböden.** [Biochemical studies of acidity of forest soils.] *Zeitschr. Forst.- u. Jagdw.* 56: 323-352. 1924.—The substitution of intensive artificial silvicultural systems for the natural ones has been accompanied by an increase in unfavorable soil conditions which the forester must combat by specific management methods. The 3 forms of forest soil acidity after Kappen, the determination of the H-ion concentration, the catalytic power of soils and the results of soil research in various parts of Czecho-Slovakia are discussed. Biochemical processes depend upon the acidity or alkalinity of the soil, and the soils under hardwood and coniferous stands show decidedly different reactions. An admixture of hardwoods in a softwood stand decreases acidity and improves edaphic conditions in the soil.—*J. Roesser*.

4522. PEROTTI, R. **Per la conoscenza dei rapporti fra microrganismi e piante verde.** [The relations between microorganisms and green plants.] *Boll. Mens. Inform. Notiz. R. Staz. Patol. Veg. Roma* 2: 96-99. 1921.—Forms as adapted to a particular environment, such as the race of *Bacillus radicicola* on the roots of Leguminosae and microscopic forms which are autotrophic or, at least, are not symbiotic in the soil, ought to have intermediate forms of

adaptation by which microorganisms and plants would be symbiotically adapted in different degrees. The preparation of extracts of plants belonging to the Cruciferae, Leguminosae and Gramineae, applied in moist earth, has led to the conclusion that the plant creates for the microorganisms of the soil an environment varying according to the nature and composition of its own body. In this way the development and state of activity of the nitrifying, denitrifying and nitrogen-fixing forms differ. The chemical nature of the Cruciferae and Leguminosae determined cultural liquids having a higher selective power than that of the Gramineae. The green plant, then, establishes a "climate-soil" variously and clearly favorable or unfavorable to the development and functioning of determined species of bacteria, so that some multiply and are more active than others. This first degree of specific agreement between green plants and microorganisms is exercised within a definite area of the soil which the author proposes to call "Edaphosphere."—*R. Ciferri (translated by J. M. Fogg, Jr.)*.

4523. PICADO, C., AND E. VICENTE. *Recherches sur le ferro-manganèse naturel comme engrais catalytique*. [Investigations on the natural ferro-manganese ores as catalytic fertilizers.] *Ann. de l'Institut Pasteur* 37: 891-899. 1923.—Ferro-manganese minerals, as they occur in the natural deposits of Costa Rica were employed on these experiments. The mineral was pulverized and then applied to plats of soil in different amounts, from 2 to 512 kilos per ha. Carrots, oats, radishes, corn, potatoes, beans, onions, dahlias, and poppies were grown on these plats. An increase in yield on the treated plats over the controls was obtained in practically every case. The mineral was also found to accelerate alcoholic fermentation when used in the proportions 1:1600-1:32000.—*A. G. Plakidas*.

4524. ROBINSON, G. W. *Modern tendencies in soil research*. *Welsh Jour. Agric.* 1: 130-134. 1925.—The author discusses the newer developments in soil investigation, directing attention to the problems of soil origins and classification, soil fertility, soil microbiology, soil constitution, and soil analysis. The importance of fundamental research on soils for the future development of agriculture is emphasized.—*Author*.

4525. SMITH, N. R., AND S. WORDEN. *Plate counts of soil microorganisms*. *Jour. Agric. Res.* 31: 501-517. *Fig. 1-3*. 1925.—The suspension of the microorganisms in soil samples was effected by the "hand shaking" method and by means of an electric vibrator of high frequency. Plate counts of these suspensions agreed closely, provided the vibrator was thoroughly sterilized. Alcohol and bleaching powder proved inefficient while equal parts of formalin and sterile water rendered the apparatus practically sterile after 15 minutes. High counts obtained by the vibrator method would, therefore, indicate incomplete sterilization. Various media for making total counts were also tested. Plates poured with soil extract agar gave higher and more uniform counts than those poured with egg albumen agar, mannite salts agar, asparaginate agar, synthetic agar and soil extract gelatin. Plate counts on soil extract agars made from type soils ranging from a loamy sand to muck showed that field soils of fair fertility, irrespective of their type, are suitable for making soil extract agars for use in estimating total counts. A fluctuation in plate counts of 20% above or below the average may occur with a uniform soil sample. Duplicate series of dilutions showed a similar fluctuation. Therefore, to be of any value, a total count should represent the average of 3 or more separate counts.—*Authors' abstract*.

SOIL SURVEYS

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CARROLL W. DODGE, *Editor*

(See also in this issue Entries 4438, 4458, 5194, 5237, 5386, 5390, 5407, 5547)

4610. ANONYMOUS. Ancient cotton fabrics in the Sudan. *Kew Bull.* 1924: 76-77. *2 fig.* 1924.—This is a short study of cotton fabrics recently found in the tombs of Meroe of the Greco-Roman period.—*T. J. Fitzpatrick.*
4611. ANONYMOUS. Borrer and Ralfs' simple triplet microscope. *Kew Bull.* 1924: 77, 78. 1924.—Note concerning microscope presented to Royal Botanic Gardens by C. V. B. Marquand. It formerly belonged to John Ralfs and William Borrer and was used by them in their investigations. A sketch of the life and work of Borrer is included.—*T. J. Fitzpatrick.*
4612. ANONYMOUS. Indian Agriculture and the new Viceroy. *Internat. Sugar Jour.* 27: 571. 1925.—The Indian Department of Agriculture, founded by Lord Curzon, comes of age this year. From a mere handful of superior officers in 1924 it has increased to nearly 200. Within the past 2 decades the placing of improved varieties at the disposal of the Indian cultivator has resulted in an increase of the area sown to selected strains from a few thousand to 5,000,000 acres. As there are still 200,000,000 acres sown annually with inferior seed there is no reason why the acreage sown with improved seed should not be increased 40 times. The policy of Indianizing the Department of Agriculture for the purpose of allowing European officers to leave India before expiration of their tenure of office is viewed with misgiving.—*Nellie E. Fealy.*
4613. ANONYMOUS. Mary Alice Marshall. *Amer. Fern. Jour.* 15: 67-68. 1925.—Miss Mary Alice Marshall died in Cambridge, Mass., March 29, 1925. Her herbarium was bequeathed to the American Fern Society.—*E. R. Walker.*
4614. ANONYMOUS. Obituary. R. W. Dykes. *Nature* 116: 908-909. 1925.—Dykes was born November 4, 1877, and died December 1, 1925. He was secretary of the Royal Horticultural Society, had made a special study of *Iris* and published a monograph of the genus in 1913. Since that time he had been working on the tulip and crocus.—*O. A. Stevens.*
4615. ANONYMOUS. Presentations to the library during 1923. *Kew Bull.* 1924: 38-41. 1924.—A general article more or less enumerating the principal accessions of books on botany.—*T. J. Fitzpatrick.*
4616. ANONYMOUS. Professor J. E. B. Warming. *Kew Bull.* 1924: 239-240. 1924.—A short statement concerning his life and work.—*T. J. Fitzpatrick.*
4617. ANONYMOUS. Thomas Frederick Cheeseman. *Kew Bull.* 1924: 27-28. 1924.—A short sketch of the life and work of the expert on New Zealand flora, born 1846, died 1923, author of 7 works on this region.—*T. J. Fitzpatrick.*
4618. ANONYMOUS. William Botting Hemsley. *Kew Bull.* 1924: 389-392. 1924.—This is a general account of the life and botanical work of Hemsley (1843-1924).—*T. J. Fitzpatrick.*
4619. ANONYMOUS. Belgian biology. [Rev. of: ERRERA, LEO. *Recueil d'oeuvres de Léo Errera. Pédagogie: Biographies.* (Work of Leo Errera. Biographies.) iii + 336 p. M. Lamertin: Bruxelles; Williams and Norgate: London; U. Hoepli: Milan; J. Hermann: Paris, 1923.] *Nature* 113: 41-42. 1924.
4620. ALEXANDER, RUSSELL GEORGE. A plain plantain; country wines, dishes & herbal cures, from a 17th century household M. S. receipt book. [ii]-viii + 97 p. S. Dominic's Press: Ditchling, Sussex, 1922.

4621. BARNHART, JOHN HENDLEY. Eugene Pintard Bicknell (1859-1925). Bull. Torrey Bot. Club 52: 119-126. *Portrait*. 1925.—E. P. Bicknell was born near New York City in 1859. He was characterized as a modest man with a thorough if not a college education. His early interest in birds and flowers led to many scientific papers (here listed), 57 of which appeared in the Bulletin of the Torrey Botanical Club. His studies in *Helianthemum*, *Sanicula*, *Sisyrinchium*, *Scrophularia* and *Agrimonia* deserve special mention.—P. A. Munz.

4622. BEAN, W. J. Harry James Veitch. Kew Bull. 1924: 300-301. 1924.—This is a short account of the life and work of Veitch (1840-1924), the noted nurseryman.—T. J. Fitzpatrick.

4623. BEGUINOT, AUGUSTO. La botanica. [Botany.] 116 p. 1 pl. Ist. Propaganda della Cultura Italiana: Rome, 1920.—A brief history of botany in Italy during the last century is followed by 70 pages of bibliography.—C. W. Dodge.

4624. BLARINGHEM, LOUIS. Pasteur et le transformisme, avec une préface de M. J. COSTANTIN. xiv + 261 p. *Illus.* Masson et Cie: Paris. 1923.

4625. BOUILLENNE, R. La station scientifique de l'Université de Liège au plateau de la Baraque-Michel. Bull. Soc. Roy. Bot. Belgique 58: 20-24. 1 pl., 1 fig. 1925.—A short history of the institution and its aims.—E. De Wildeman (translated).

4626. CHRIST, H. Der Briefwechsel der Basler botaniker des 18 Jahrhunderts Achilles Mieg, Werner de la Chenal und Jacob Christoph Ramspek mit Albrecht v. Haller. [The correspondence of the 18th century botanists of Basel, Achilles Mieg, Werner de la Chenal and Jacob Christoph Ramspek with Albrecht von Haller.] Verh. Naturf. Ges. Basel. 29: 1-59. 1918.

4627. CONFERENCIA DE AGRONOMOS. Disertaciones sobre Misiones, Chaco, Formosa, Chubut y otras regiones de la Patagonia, por la Conferencia de agronomos. [Dissertations on Misiones, Chaco, Formosa, Chubut and other regions of Patagonia, for the agronomic conference.] 408 + [8] p. *Illus., maps.* Compañía Gráfica Argentina: Buenos Aires. 1920.

4628. CRISP, FRANK. (Ed. by CATHERINE CHILDS PATERSON.) Mediæval gardens, 'flowery medes' and other arrangements of herbs, flowers and shrubs grown in the middle ages, with some account of Tudor, Elizabethan and Stuart gardens. 2 vols. pp.? *Illus.* John Lane: London [1924].

4629. DEHALU, M. La station scientifique de la Baraque Michel (point culminant de l'Ardenne). [The scientific station on Baraque Michel, the highest point of Ardenne.] Bull. Acad. Roy. Belgique. Cl. Sci. V. 10: 447-455. 2 fig. 1924 [1925].

4630. DÜGGELI, M. Hans Konrad Schellenberg. Vierteljahrsschr. Naturf. Ges. Zürich 68: 590-592. 1923.—A brief biography with mention of his most important work. Born in 1872, in Hottingen, Switzerland; died in Zürich 1923.—John H. Schaffner.

4631. FERDINANDSEN, C. Eug. Warming in memoriam. Videnskabelig Meddel. Naturhist. Forening 78: XV-XXIX. 1 portrait. Copenhagen, 1924.

4632. GÜSSOW, H. T. The division of botany. In: Canada. Dept. Agric. The organization, achievements and present work of the Dominion experimental farms. P. 121-130. Ottawa, 1924.

4633. HALLER, ALBRECHT VON. Briefe an Johannes Gesner. [Letters to Johannes Gesner. 1728-1777.] Ed. HENRY E. SIGERIST. viii + 576 p. Weidmannsche Buchhandlung: Berlin, 1923.

4634. HANSEN, H. MOLHOLM. Dansk bot litteratur i 1921, 1922 og 1923. [Danish Botanical Literature in 1921, 1922, and 1923.] Bot. Tidsskr. 38: 388-414. 1925.—This is an alphabetic list of papers published by Danish and other authors in Denmark or in Danish periodicals, and the 4th supplement to CARL CHRISTENSEN. "Danish botanical literature 1880-1911, Copenhagen. The 3 earlier ones have been published in Ibid. 34: 161-184; 36: 281-303; and 37: 337-362.—C. A. Jorgensen.

4635. HOLMES, S. J. Louis Pasteur. vi + 246 p. 4 pl. Harcourt, Brace & Co.: New York, 1924.

4636. HOWARTH, O. J. R. The British Association for the Advancement of Science: A retrospect 1831-1921. viii + 318 p. The British Association: London, 1921.

4637. HOWE, JOHN BENEDICT. *The New York state agricultural society—its history and its objects.* New York [State] Dept. Farms and Markets. Bull. 161. 1-39. Albany, 1924.

4638. HUME, ETHEL DOUGLAS. *Béchamp or Pasteur? A lost chapter in the history of biology.* (Founded upon ms. by MONTAGU R. LEVERSON with a foreword by S. JUDD LEWIS.) viii + 296 p. Covici-McGee: Chicago, 1923.

4639. IOWA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS. *In memoriam, Edgar Williams Stanton, eighteen hundred and fifty, nineteen hundred and twenty.* 15-134 p. *Illus.* [Clio press: Iowa City, Iowa, 1921?]

4640. JACKSON, B. D. *James Britten.* Kew Bull. 1924: 392-393. 1924.—This gives a short sketch of the personality and botanical work of James Britten (1846-1924).—*T. J. Fitzpatrick.*

4641. JENSEN, V. *Carl Julius Salomonsen.* Nat. Verden [Kobenhavn] 9: 1-6. 1 portrait. 1925.

4642. KILLERMAN, S. Chr. H. Persoon (1755-1837). I. *Zeitschr. Pilzkunde* 4: 92-96. 1925.—This is an appreciation of Persoon based largely on Lloyd's account of his life and herbarium. The natal date (1761) is corrected in a "Nachtrag" to conform to Verwoerd's researches on his early life.—*F. Weiss.*

4643. LAIR, MAURICE. *Le socialisme et l'agriculture française.* Plon-Nourrit et Cie: Paris [1922].

4644. LECOMTE, HENRI. *Les dernières publications et les collections botaniques du Prince Roland Bonaparte, membre de l'Académie.* [The later publications and the botanical collections of Prince Roland Bonaparte, member of the Academy.] *Compt. Rend. Acad. Sci. Paris* 181: 753-755. 1925.

4645. LEIPER, ROBERT THOMSON. *Periodicals of medicine and the allied sciences in British libraries, including the sciences of agriculture, anatomy, anthropology, bacteriology, biology, botany, chemistry, ethnology, general science, physics, physiology, zoology.* (With the collaboration of H. M. WILLIAMS AND G. Z. L. LE BAS.) vi + 193 p. British Medical Assoc.: London [1923].

4646. LOESEJER, T. *Gustav Lindau.* *Verh. Bot. Ver. Prov. Brandenburg* 66: 48-65. 1924.

4647. MARZELL, HEINRICH. *Unsere Heilpflanzen und ihre Stellung in der Volkskunde.* (Ethnobotanische Streifzüge.) [Our drug plants and their place in folklore (Ethnobotanical excursions).] xxviii + 240 p., 38 fig. Theodor Fisher: Freiburg im Breisgau, 1922.

4648. MASSEY, R. E. *Ancient cotton fabrics.* Kew Bull. 1924: 267-270. 1924.—This gives a short account of the early history of cotton in Egypt and the Sudan.—*T. J. Fitzpatrick.*

4649. MAUDE, AYLMER. *The authorized life of Marie C. Stopes.* 226 p. 12 pl. Williams & Norgate: London, 1924.

4650. MIALL, L. C. *History of biology.* 160 p. Watts and Co.: London, 1924.

4651. MIDDLETON, WILLIAM SHAINLINE. *John Bartram, Botanist.* *Sci. Monthly* 21: 191-216. 11 fig. 1925.—John Bartram (1699-1777), a Quaker farmer, established the first important botanical garden in America in 1730 near Gray's Ferry on the Schuylkill River. His early education was meager, but he had some knowledge of the medicinal uses of drugs and this may have been the source of his interest in botany. He studied the native flora of the eastern part of the U. S. A. In the garden grew many rare plants sent from other countries. Some of these still survive. Bartram was a lifelong friend of Peter Collinson of London, and was connected more or less with other European botanists. In 1765 he was appointed botanist to the king for the Americas. In the years when the garden passed out of the hands of the Bartram family it was stripped of its rarest plants. It is now a part of a park and as such is being restored.—*A. M. Taylor.*

4652. NICHOLSON, KATHARINE STANLEY. *Historic American trees.* 104 p. *Illus.* Frye Publ. Co.: New York [1922].

4653. PEASE, ALFRED E. *Edmund Loder; naturalist, horticulturist, traveller, and sportsman: A memoir.* (With contributions by ST. GEORGE LITLEDAL, CHARLES G. A. NIX, LORD COTTESLOE, J. G. MILLAIS, and W. P. PYCRAFT. x + 356 p. John Murray: London, 1923.

4654. RICHET, CHARLES. *L'Oeuvre de Pasteur, leçons professées à la faculté de médecine de Paris.* [The work of Pasteur, lectures delivered to the faculty of medicine of Paris.] 119 p. Felix Alcan: Paris, 1923.

4655. ROUX, EMILE. The medical work of Pasteur. (Translated from the French by ERWIN F. SMITH.) *Sci. Monthly* 21: 365-389. 2 fig. 1925.—Pasteur's medical work began with his study of fermentation. He concluded that what a ferment is to fermentation a virus is to an infectious disease. By his study of pebrine in silkworms, anthrax, puerperal fever, rabies, etc., he overthrew many old medical traditions. His work for publication was prepared with minute care. Mme. Pasteur was his best collaborator.—*A. M. Taylor.*

4656. SAFFORD, WILLIAM E. Foods discovered with America. *Sci. Monthly* 21: 181-186. 1925.—Many plant foods were found in use among the natives of the Americas by the early explorers. Most of these plants were under cultivation but many growing wild were also used. Appended to the paper is an elaborate menu, from cocktail to cigars, made up entirely from aboriginal American plants.—*A. M. Taylor.*

4657. SCALA, E. *Storia della vite e del vino.* Monografia storica, artistica e tecnica. [History of the grape and of wine.] 207 p., 400 fig. Italia Industriale Artistica Editrice: Turin, 1925.—*R. Ciferri.*

4658. SCHIERBEEK, A. Van Aristoteles tot Pasteur: Leven en Werken der groote Biologen. [From Aristotle to Pasteur: Lives and works of great biologists. 479 p. W. Versluys: Amsterdam, 1923.

4659. SWINGLE, WALTER TENNYSON. Chronologic list of the dissertations of Charles Linnaeus 1743 to 1776. With reference to the libraries in the United States containing original editions of these dissertations. 63 p. U. S. Dept. Agric. Washington, D. C., 1923.—“In preparing the original manuscript of this list Miss ALICE C. ATWOOD, reference librarian of the Bureau of plant industry . . . contributed both ideas and facts. . . .”

4660. THOMPSON, R[EGINALD] CAMPBELL. *Assyrian medical texts from the originals in the British Museum.* vii + 107 p. Oxford University Press: London, 1923.—This is a reproduction of the cuneiform texts only, the translation and discussion of the herbs to follow in another book, *The Assyrian Herbal*, by the same author.—*C. W. Dodge.*

4661. TRAIL, [KATHERINE ELIZABETH]. James William Helenus Trail: a memorial volume. *Aberdeen University Studies* 91: i-xi + 1-56, 327-331. 2 portraits. 1923.—In this memorial volume is incorporated a fragmentary autobiography of Trail up to 1870, and a very complete bibliography of his publications, including numerous short notes, and the titles of papers by others describing material collected by him, also species named in compliment to him. The remainder of the memorial volume is devoted to the posthumous publication of his flora of the city parish of Aberdeen.—*C. W. Dodge.*

4662. UHLMANN, EDUARD. *Entwicklungsgedanke und Artbegriff in ihrer geschichtlichen Entstehung und sachlichen Beziehung.* [Evolution and the species concept in historical origin and in actual relation.] Gustav Fischer: Jena, 116 p. 1923.—The subject is covered from Heraclitus to Johannsen.—*Frederick V. Rand.*

4663. WILKINS, V. E. *Agricultural research and the farmer.* A record of recent achievement. 168 p. Eyre and Spottiswoode: London, 1922.—“Titles of papers dealing with agricultural research published by research institutions and advisory centres during the years 1920 and 1921.”

BOTANICAL EDUCATION

C. STUART GAGER, *Editor*

ARTHUR H. GRAVES, *Assistant Editor*

(See also in this issue Entries 4816, 4855, 4964, 5499, 5753)

4664. ANONYMOUS. Biological exploration in West China and Tibet. *China Jour. Sci. and Arts* 31: 32. 1925.—Mention is made of the past explorations of J. F. Rock in southwestern China and of his recent start upon further explorations in West China and northern Tibet.—*Albert N. Steward.*

4665. ANONYMOUS. Educational notes,—Fukien Christian University. China Jour. Sci. Arts 34: 246. 1925.—Mention is made of the reorganization of the Science Department with particular reference to courses in biology and botany.—*Albert N. Steward.*

4666. ANONYMOUS. Lists of staffs of the Royal Botanic Garden Kew, and of botanical departments, establishments and officers at home, and in the Dominions, India and the Colonies, in correspondence with Kew. Kew Bull. Appendix II. 1923: 1-48. 1923.—Gives the personnel with indications of special lines of investigations.—*T. J. Fitzpatrick.*

4667. ANONYMOUS. Paintings of Burmese and Madras plants. Kew Bull. 1923: 404. 1923.—A short account of the King collection recently presented to the Kew library.—*T. J. Fitzpatrick.*

4668. ANONYMOUS. Report of the herbarium, 1923. Kew Bull. 1924: 41-48. 1924.—A general report on botanical activities at the Kew herbarium, with some account of the principal accessions during the year.—*T. J. Fitzpatrick.*

4669. ANONYMOUS. Research in Jodrell laboratory in 1923. Kew Bull. 1924: 37. 1924.—A short statement of research activities.—*T. J. Fitzpatrick.*

4670. ANONYMOUS. The national herbarium of the Union of South Africa. Kew Bull. 1923: 405-407. 1923.—A botanical survey was established in 1919. One of the principal aims was a central herbarium which was formally opened July 20, 1923.—*T. J. Fitzpatrick.*

4671. ANONYMOUS. Training technologists for home beet factories. Internat. Sugar Jour. 27: 513-514. 1925.—An educational scheme for training special technical officers for beet-sugar factories has been drawn up by a committee acting under the aegis of the British Sugar Beet Society. The scheme provides that to qualify for such posts the candidates should have a university course of training in general science and in sugar technology, supplemented by several years of practical experience in a beet-sugar factory. Successful candidates will receive a diploma in beet-sugar technology. Ordinarily the training is to be confined to men with a B. S. degree, and it is hoped that universities concerned may allow beet-sugar technology to form an optional subject in applied chemistry for that degree. Failing the training in the university course, the course of beet-sugar technology would occupy 2 years, comprising 3 terms: from autumn to spring, study at any approved institution, from October to January at the beet-sugar factory, and academic study from January to June or July. At the factory the student would be an unpaid technical volunteer, working with the men at least a week at each station in the factory.—*Nellie E. Fealy.*

4672. BLUMQUIST, H. L. Notes on the teaching of biology. Jour. Elisha Mitchell Sci. Soc. 39: 86-88. 1923.—The author strongly advocates the use of living material in introductory courses and the collection of this material by the student. He deplores the use of prepared slides and advises the reduction of microscopic work to a minimum.—*W. C. Coker.*

4673. CHASE, AGNES. Collecting grasses in Brazil. Jour. New York Bot. Gard. 26: 196-198. 1925.

4674. GIVLER, J. P. Some considerations in defense of the general biology course. Jour. Elisha Mitchell Sci. Soc. 37: 123-129. 1922.

4675. HARGITT, CHARLES W., AND GEORGE T. HARGITT. Outlines of general biology. An introductory laboratory manual. 192 p. Fig. 1-5. Lea and Febiger: Philadelphia and New York, 1925.—“An introductory course should guide the student to a knowledge of the scientific method and stimulate him to an interest in scientific inquiry. This is the idea underlying the method and plan of the book. . . . The order of presentation is a result of our own experience that a form of some size and related to human structure is the best, both practically and pedagogically. . . . it seems better in an introductory course to discuss general principles in connection with concrete organisms. . . .”—After a study of the frog the outlines take up, in turn, organs, tissues, and cells, protoplasm, cytology, and then proceed to a study of examples of the main types of organisms, largely animal, but including also yeasts, bacteria, and ferns.—General directions are given in an appendix and a glossary is provided.—*Frederick V. Rand.*

4676. LARSEN, C. SYRACH. Den forstbotaniske Have i Charlottenlund. [The Arboretum at Charlottenlund.] Kgl. Vet. og Landbohøjskoles Aarsskrift [København] 1925: 17-62. 17 fig., 1 map. 1925.—The Arboretum at Charlottenlund near Copenhagen is designed for

the use of the students of forestry at the Royal College and was founded in 1838-1839. The collection of trees was extended in 1845-1851 and again in 1871-1872. In 1925 a part of the Arboretum was appropriated for the use of the railway station, many fine trees being cut down. Photographs and descriptions of these are given. There were good specimens of *Pinus Laricio*, *P. silvestris*, *P. contorta*, *Picea ajanensis*, *P. sitchensis*, *Betula papyrifera*, *Juglans cinerea* and species of *Carya* and *Quercus*.—C. A. Jorgensen.

4677. M., E. W. The fundamentalist controversy in the United States. [Rev. of: (1) KNIGHT, CHARLES SPURGEON. Both sides of evolution: A debate. 233 p. The Arthur H. Field Publishing House: San Jose, California, 1925. (2) MORE, LOUIS TRENCHARD. The dogma of evolution. vi + 387 p. Princeton University Press: Princeton; Oxford University Press: London, 1925.] *Nature* 116: 562-565. 1925.

4678. MADDOX, RUFUS S., AND ALMON E. PARKINS. Our trees and how they serve us. vi + 180 p. *Illus.* Charles Scribner's Sons: New York, 1925.—The object of the work is to present some of the primary but fundamental facts about trees and forests, for children in grammar school grades.—W. N. Sparhawk.

4679. S., E. J. Botanical text books. [Rev. of: (1) STENHOUSE, ERNEST. A class book of botany. xi + 514 p. Macmillan and Co.: London, 1925. (2) BROWN, WM. H. A textbook of botany. xi + 484 p. Ginn and Co.: Boston, New York & London, 1925 (see Bot. Absts. 14, Entry 6945).] *Nature* 116: 568. 1925.

4680. SHOVE, R. F. The study of the living plant. *School Sci. Rev.* [London] 7: 99-106. 1925.—Botany is well adapted for the study in schools of the essential phenomena of life. It should be the study of the living plant, in the field as far as possible. A seasonal study throughout the year of a few selected plants gives the pupil the best idea of a living organism, and leads to a general interest in growing things. The author outlines a course of study for the school year.—Elsie Hammond.

4681. SOWERBY, ARTHUR DE C. Evolution v. revolution. *China Jour. Sci. and Arts* 3¹¹: 579-582. 1925.—Starting with the Scopes' trial in Tennessee and the misconception of the real meaning of evolution that exists in the minds of many people, as a point of departure, the author points out the weakness and the resulting loss to society in attempting changes by revolution instead of permitting a slower and more gradual process of development or evolution. He cites as examples the French Revolution, and Russia and China at the present time. In conclusion he says, 'Evolution inevitably works toward a high state of perfection: revolution as inevitably leads to chaos and ruin.'—J. T. Illick.

4682. TRELEASE, WM. Winter botany; a companion volume to the author's plant materials of decorative gardening. 2nd ed., revised. xlii + 393 p. *Illus.* Pub. by the author: Urbana, Illinois, 1925.—(See also Bot. Absts. 12, Entry 505.)

CYTOLOGY

GILBERT M. SMITH, *Editor*

(See also in this issue Entries 4723, 4890, 4939, 4950, 4957, 4958, 4963, 5055, 5101, 5111, 5112, 5115, 5118, 5132, 5134, 5152, 5232, 5245, 5251, 5302, 5332, 5348, 5447, 5455, 5486, 5522)

4683. ALEXEIEFF, A. Sur la question du noyau chez les bactéries. (Contribution à l'étude des mitochondries et des grains métachromatiques.) [The nucleus in bacteria. A contribution to the study of mitochondria and metachromatic granules.] *Arch. Protistenk.* 49: 396-432. 2 pl., 5 fig. 1925.—*Bacillus fusiformis* and *B. mitochondrialis* are described in detail. In addition, the paper includes descriptions, with figures, of mitochondria and mucosomes in *Monas*, *Polytoma uella*, *Chlamydomonas*, cysts of *Euglena viridis*, cysts of *Eutreptia viridis*, and of the metachromatic substance in diatoms. Methods of staining metachromatic granules and mitochondria are listed. The microchemical changes in the digestion of *B. mitochondrialis* by *Cercomonas fusiformis* are described at length. It is concluded that these bacteria have no nuclei, and yet are rich in mitochondria; hence mitochondria were evolved before the appearance of the nucleus. The term "mucosome" is

proposed as a substitute for "metachromatic granule." The functions of the mitochondria and mucosomes are discussed, and the question of the evolution of the cell is considered.—*R. P. Hall.*

4684. BATAILLON, E. Les premières cinèses parthenogénétiques chez *Bufo vulgaris* et le mécanisme de la régulation. [The first parthenogenetic mitosis in *Bufo vulgaris* and the mechanism of regulation.] *Compt. Rend. Acad. Sci. Paris* **181**: 392-394. 1925.

4685. BELLING, JOHN. On photographing chromosomes. *Jour. Roy. Microsc. Soc. London* **1925**: 445-446. 1 fig. 1925.—A description of the apparatus used in photographing chromosomes stained in iron-aceto-carmin.—*Ralph E. Cleland.*

4686. BLACKBURN, K. Chromosomes and classification in the genera *Rosa* and *Salix*. (Abstract.) *Rept. British Assoc. Adv. Sci.* **1924**: 453. 1925.

4687. CIACCIO, C. Rilievo riguardante alcune ricerche del Prof. V. Diamare sui grassi e lipoidi. [Gleanings concerning some researches of V. Diamare on fats and lipoids.] *Riv. Biol.* **7**: 21-38. 1925.—This is a controversy concerning the identification of fatty substances in general and lipoids in particular by modern methods of histochemical investigation, especially by means of Sudan III and analogous stains, in which the author defends their microchemical value. (See Entry 4689.)—*R. Ciferri (translated by J. M. Fogg, Jr.).*

4688. DEHORNE, ARMAND. Indications sur le linome de quelques catégories cellulaires. [Indications of the linome in certain cell categories.] *Compt. Rend. Acad. Sci. Paris* **181**: 528-529. 1925.—The author has applied the term, linome (*Ibid.* **180**: 333. 1924.), to the filamentous formations, threads, cytoplasmic spires, etc., which others include in the chondriome. In this paper he describes these structures in various animal cells.—*C. H. Farr.*

4689. DIAMARE, V. Riposta al rilievo del Prof. Ciaccio in riguardo a mie ricerche sui grassi e lipoidi. [Reply to the gleanings of Prof. Ciaccio concerning my researches on fats and lipoids.] *Riv. Biol.* **7**: 158-166. 1925.—The author defends his method for differentiating microscopically the lipoids, as viscous and fluido-crystalline substances, from isotropic fats and fatty crystallizations. (See preceding entry.)—*R. Ciferri (translated by J. M. Fogg, Jr.).*

4690. EMBERGER, LOUIS. Le chondriome des végétaux. [The chondriome in plants.] *Compt. Rend. Acad. Sci. Paris* **181**: 226-228. 1925.—The author outlines the 3 current conceptions of the relation of mitochondria to plastids (that they are genetically independent; that the plastids are differentiated from mitochondria; and that the plastids are mitochondria) and defends the 3rd interpretation as being most in harmony with the observations on various plants and animals, and with the discovery that mitochondria may in turn arise from plastids, that is, that they form a continuous line. He is opposed to regarding mitochondria ever as being inactive; but considers rather that the chloroplast represents a very marked expression of activity. The chondriome of living organisms is to be regarded as a unit, with diverse potentialities as in the remarkable development of chloroplasts.—*C. H. Farr.*

4691. EMBERGER, LOUIS. Sur la réversion des plastes chez les végétaux. [The reversion of plastids in plants.] *Compt. Rend. Acad. Sci. Paris* **181**: 879-880. 1925.—Evidence for transformation of plastids into mitochondria is further supported by observations showing that plastids may undergo only partial reversion to mitochondria. This supports the view that the mitochondria from which plastids are formed in development are the same as those produced from plastids in maturation.—*C. H. Farr.*

4692. FAURE-FREMIET, E. Transformations subies in vitro par les ambiocytes de quelques invertébrés. [The transformation occurring in vitro in the ambiocytes of certain invertebrates.] *Compt. Rend. Acad. Sci. Paris* **181**: 573-575. 1925.

4693. GATES, R. RUGGLES. Species and chromosomes. (Abstract.) *Rept. British Assoc. Adv. Sci.* **1924**: 452-453. 1925.

4694. GRASSE, PIERRE-P. Vacuome et appareil de Golgi des *Euglènes*. [The vacuome and the Golgi apparatus of *Euglena*.] *Compt. Rend. Acad. Sci. Paris* **181**: 482-484. 1925.—A study by means of neutral red and cresyl blue to determine whether the vacuome and Golgi apparatus of *Euglena proxima* are identical. The stigma is found to present all of the microchemical reactions of the Golgi apparatus. The structure of the eyespot is that of the Golgi apparatus, having 2 substances, chromophobe and chomophile. The latter are grains, visible in living condition, and number from 5 to 30.—*C. H. Farr.*

4695. MAIGE, A. Réaction amylogène uniloculaire ou pluriloculaire des plastes. [Unilocal versus plurilocal amylogen reactions of plastids.] *Compt. Rend. Acad. Sci. Paris* **181**: 1157-1159. 1925.—Legumes were studied. Unilocal amylogenous leucoplasts can arise either from amyliiferous or non-amyliiferous plastids. In the latter instance the plastid may become plurilocal by the formation of a lateral neck (calotte) or by a crown of entirely new compartments. The plurilocal type may also arise directly from the non-amyliiferous plastids by growth and simultaneous alveolization of the stroma. The physiological unit for starch formation is the unilocal plastid or the individual compartment of the plurilocal plastid.—*C. H. Farr.*

4696. MASCRE, M. Sur le periplasmodium staminal des Commelinacées. [The staminal periplasmodium of the Commelinaceae.] *Compt. Rend. Acad. Sci. Paris* **181**: 1165-1166. 1925.—The walls of the tapetal cells break down and the cytoplasm forms a periplasmodium among the pollen mother cells. In this continuous protoplasm are found nuclei, crystals of calcium oxalate, and mitochondria which do not assimilate starch or fat. No plastids or chondriocots are present. The nuclei decrease in size and finally undergo dissolution.—*C. H. Farr.*

4697. MOTTE, JEAN. Sur la cytologie des mousses. [The cytology of mosses.] *Compt. Rend. Acad. Sci. Paris* **181**: 618-619. 1925.—In a study of living material, with some intravital staining, the chloroplasts in some species are found in the spores or in the apical cells of the thallus, in a very much reduced form, but nevertheless containing chlorophyll. Their transition is followed to the young leaves, where starch is formed in them. They are present at the beginning of the antherid development but during the course of development they appear to be changed into chondriocots. Vacuoles also are present in the spores and apical cells. The intracytoplasmic granules can scarcely be seen where chloroplasts are well developed, but they are readily visible in the apical cells and in the wall of the antherid, and also in the old paraphyses where the chloroplasts have been resorbed.—*C. H. Farr.*

4698. MOTTE, JEAN. Sur l'évolution cytologique de l'antheridie des mousses. [The cytological development of the antheridia of mosses.] *Compt. Rend. Acad. Sci. Paris* **181**: 803-805. 10 fig. 1925.—A continuation of the study (see preceding Entry) on the antheridia of 2 species of *Mnium*, using fixed material. During the development of the antheridial cell the chloroplasts become transformed into chondriocots, which then break up into granules indistinguishable from the intraprotoplasmic granules that previously existed.—*C. H. Farr.*

4699. POPOVICI, H. Sur la formation des essences. [The formation of essential oils.] *Compt. Rend. Acad. Sci. Paris* **181**: 126-128. 1925.—This is a cytological study of cells containing essential oils. The secretory cells are smaller or equal in size to the parenchyma cells nearby. The secretory canals or glandular hairs of *Philodendron*, *Kleinia*, *Parthenium*, *Dahlia*, *Glechoma*, *Quercus*, etc., were studied. They were stained with Sudan, tincture of orcanette, cyanin, osmic acid, or indophenol blue. The last has been little used in vegetable cytology. The oil is found to be in the cytoplasm and not in the vacuoles. The plastids are hardly larger than mitochondria. The mitochondria are red and the oil blue in material fixed by Regaud's method, stained according to Kull, followed with the "nadi" mixture. The mitochondria are black and the oil red in material fixed with Regaud and stained with iron-haematoxylin followed by Sudan. It is stated that the oil is not retained in the paraffin sections in the Regaud method, but that they are with the Meves method.—*C. H. Farr.*

4700. RAU, A. SUBBA, AND F. W. ROGERS BRAMBELL. Staining methods for the demonstration of the Golgi apparatus in fresh vertebrate and invertebrate material. *Jour. Roy. Microsc. Soc. London* **1925**: 438-444. 2 pl. 1925.—The Golgi apparatus appears as a set of curved rods studded over the surface of the archoplasmic sphere. The appearance of mitochondria, acrosome, chromatoid body and Golgi apparatus of male germ cells of the rodents, when studied by the Lewis method, is similar to that seen after the use of the silver and osmium impregnation method; and since this appearance closely resembles that observed in living cells stained with Janus green alone, such similarity constitutes a justification of the silver and osmium methods.—*Ralph E. Cleland.*

4701. SAUVAGEAU, C. Sur la localization du brome chez une Algae floridée (*Antithamnionella sarniensis* Lyle). [The localization of bromine in a red alga, *A. sarniensis*.] Compt. Rend. Acad. Sci. Paris 181: 841-843. 1925.—Living cells contain bodies which resemble the ioduque previously described by the author for certain marine algae. These bodies, however, contain bromine, and are given the name bromuque. Their appearance and reactions are described.—*C. H. Farr.*

4702. SAUVAGEAU, C. Sur les bromuques des *Antithamnion* Naeg. [The bromuques of *Antithamnion*.] Compt. Rend. Acad. Sci. Paris 181: 1041-1043. 1925.—The author has reported the discovery of a structure in the cells of *Antithamnionella* which contained bromine, and to which he applied the name bromuque (see preceding Entry). Accidentally these plants died and an examination of the cells revealed the persistence of these structures. Bromuques were also found in herbarium specimens of 5 *Antithamnion* species. They are present in the gland cells, but were not found in the gland cells of *Ceramium tenuissimum*.—*C. H. Farr.*

4703. WELCH, M. B. The secretory epidermal cells of certain eucalypts and Angophoras. Jour. and Proc. Roy. Soc. New South Wales 57: 218. 1923.—The elastic covering of rubber found on the young leaves of many of the eucalypts and the closely allied genus *Angophora* is secreted by the outer or epidermal cells, which are of a peculiar shape. This covering acts as a very efficient means of reducing evaporation from the leaf, and the fact that only the more primitive species possess it, seems to indicate that originally the eucalypts were exposed to much greater extremes of temperature than at present.—(*From Australian Sci. Absts.*)

4704. WRIGHT, G. PAVLING. The relative duration of the various phases of mitosis in chick fibroblasts cultivated in vitro. Jour. Roy. Microsc. Soc. London 1925: 414-417. 1925.—Observations were made on fixed material of tissue culture preparations from chick embryo hearts of 7-12 days. If telophase lasts for 5 minutes, the following are the durations for the various phases: Early prophase, 8 minutes; spireme, 6½ minutes; metaphase, 5 minutes; anaphase, 4 minutes; telophase, 5 minutes; reconstruction, 5 minutes.—*Ralph E. Cleland.*

ECOLOGY

GEO. D. FULLER, *Editor*

(See also in this issue Entries 4460, 4483, 4501, 4522, 4616, 4661, 4664, 4817, 4836, 4837, 4842, 4947, 4998, 5021, 5037, 5041, 5042, 5043, 5044, 5056, 5057, 5063, 5064, 5065, 5067, 5068, 5075, 5081, 5083, 5085, 5087, 5088, 5090, 5091, 5092, 5108, 5114, 5121, 5125, 5130, 5133, 5202, 5212, 5288, 5322, 5375, 5452, 5461, 5545, 5551, 5558, 5559, 5706, 5707, 5754, 5757, 5758)

GENERAL, FACTORS MEASUREMENTS

4705. ADAMS, CHARLES C. Ecological conditions in national forests and national parks. Sci. Monthly 20: 561-593. 1925.—The conditions in the Yellowstone, Sequoia, and Grand Canyon National Parks and the Tusayan and Kaibab National Forests are discussed. Strong objections are made to the policy of introducing plants or animals not native to the region, and to overgrazing. Wild game preserves may be included in the parks or forests but should be under protection of the Forest Service, since it is best able to control fire. Every park should have a research naturalist.—*A. M. Taylor.*

4706. ALLORGE, P. Variations du pH dans quelques tourbières à Sphaignes du centre et de l'ouest de la France. [Variations in the pH of Sphagnum bogs in the central and western parts of France.] Compt. Rend. Acad. Sci. Paris 181: 1154-1156. 1925.—Lists of plants are given for localities with different pH as determined by colorimetric methods. The mountains of Margeride (about 1400 meters), the Rhune at the base of the Pyrenees (about 545 meters), and the range of Multonne in Mayenne (about 270 meters) were studied. The pH was 3.9-4.6 in Sphagnum mounds, 4.9-5.4 in the basins of *Carex vulgaris*, 4.9-5.6 in the Ruhn-chosporetum, 5.2-5.9 in slow streams containing *Potamogeton polygonifolium*, and 5.7-6.8 in the Montietum. Desmids, the most characteristic algae, develop best at pH 5-6.—*C. H. Farr.*

4707. AUER, VÄINÖ. Piirteitä Keski-Pohjanmaan soistumistavoista. [Invasion of land by moors in middle Ostrobothnia.] (German summary.) Comm. Inst. Quaest. Forest. Finlandiae 3. 1-71. 6 pl., 16 fig. 1921.—The author develops his opinion as to the way in which the peat moors originate, giving special attention to the degeneration of forests to moors and swamps which is at present occurring in middle Ostrobothnia. The investigation contains many valuable contributions to the question.—Y. Ilvessalo.

4708. AUER, VÄINÖ. Suotutkimuksia Kuusamon ja Kuolajarven vaara-alueilta. [The moors in the mountain districts of Kuusamo and Kuolajarvi.] (German summary.) Comm. Inst. Quaest. Forest. Finlandiae 6. 1-257. 20 pl., 87 fig. 1922.—This is a research monograph on the peat lands of this peculiar and extremely rugged country. The types of vegetation and of peat are described in detail. The various complexes of the peat lands are outlined and attention is directed to a most remarkable complex which seems peculiar to the region. The present development of moors through the degeneration of woodlands is described, as well as their development during the post-glacial period. The latter is based on a stratigraphical study in which such modern methods as pollen statistics are used.—Y. Ilvessalo.

4709. AUER, VÄINÖ. Tutkimuksia Lapin tulvamailta. [The flooded lands in Lapland.] (German summary.) Comm. Inst. Quaest. Forest. Finlandiae 4. 1-72. 24 fig. 1921.—The author describes the transformation of some of the North Finish river valleys into swamps and bogs. This is caused by the erosive activities of the rivers and by the accumulation of sediment.—Y. Ilvessalo.

4710. AUER, VÄINÖ. Über die Entstehung der Stränge auf den Torfmooren. [Origin of ridges on the peat-moors.] Acta Forest. Fennica 12. 1-145 p. 14 pl., 38 fig. 1920.—The author first gives the various hypotheses in explanation of the origin of the parallel ridges peculiar to northern treeless peatmoors. Then he presents his own conception, based on several years' investigations, of the geomorphologic reasons, laying special stress on the great importance of regelation in their origin. He concludes that the geographical expansion of the ridged moors is dependent on climate (the southern borders show a coincidence with the isotherms).—Y. Ilvessalo.

4711. AUER, VÄINÖ. Zur Kenntnis der Stratigraphie der Mittel-Österbottischen Moore. [The stratigraphy of the moors in middle Ostrobothnia.] Acta Forest. Fennica 18. 1-40. 5 pl., 14 fig. 1921.—The author investigates the origin and development of peat lands based on stratigraphy. He shows that the alternating strata of peat lands do not necessarily represent changes in climate, but may, to a great extent, be explained by local variations in the humidity of the peat moors.—Y. Ilvessalo.

4712. BACKMAN, A. L. Torvmarksundersökningar i mellersta Österbotten. [Moors in middle Ostrobothnia.] Acta Forest. Fennica 12. 1-190. 36 fig., 2 map. 1920.—The peat moors of middle Ostrobothnia occupy 50% of its whole area. The extent, origin and depth of these moors are here discussed on the basis of data obtained from extensive levellings and soundings. These data, together with samples of peats and charts of the area, revealed the former existence of more than 100 extinct lakes. The growth in height of the peat lands was determined by reference to the age and position of the root collar of 457 pine trees. Half of the entire area of these lands is occupied by moors having a depth of 0-0.5 m. The growth of 50 cm. in depth in a peat moor requires at least 40-60 years, in most cases at least 100-200 years and at the utmost 500-700 years. Only 5% of these peat lands had their origin in lakes, the remaining 95% coming from degeneration of woodlands.—Y. Ilvessalo.

4713. BRAUN-BLANQUET, JOSIAS. Eine pflanzengeographische Exkursion durch Unterengadin und in den schweizerischen Nationalpark. [A phytogeographic excursion through Lower Engadine and in the Swiss National Park.] Beiträge Geobot. Landesaufl. 4: 1-80. map. 1918.—After a review of the climatic conditions of the Lower Engadine (Basse Engadine) the author describes the xerophile associations occurring at Remüs and at Ardez and gives lists of the species and the associations observed in the alpine parts of Val Scarl and the Swiss National Park. A new station in the western Alps is reported for *Potentilla multifida* L. The concepts of "exclusiveness" ("Gesellschaftstreue"), "presence" ("Stetigkeit"), "quantity" ("Mengenverhältnis"), and "sociability" ("Geselligkeit"), are discussed and

the terms introduced into the vocabulary of phytosociology.—A list of the fungi collected on the excursion and identified by ED. FISCHER, AND EUG. MAYOR is given.—*Author (translated).*

4714. BRAUN-BLANQUET, JOSIAS. Zur Wertung der Gesellschaftstreue in der Pflanzensoziologie. [Importance of exclusiveness in phytosociology.] Vierteljahrsschr. Naturf. Ges. Zürich 70: 122-149. 1925.—The exclusiveness with which species occur in certain plant communities is well recognized. In this article the author seeks to demonstrate the great advantages phytosociology would derive from the study of this exclusiveness. From the point of view of social organization the "characteristics," that is, the species possessing the quality of exclusiveness in the highest degree, are important indicators. Their presence marks a stage in the development of the association or of the community. The characteristics also react most freely to ecological factors. Any alternation in the conditions within a community expresses itself most strikingly in the changes in the group of characteristic species. The recognition of the characteristics permits delimitation of a given association to which they serve as indicators. Aided by such good indicators the author has studied the distribution of the *Xerobrometum erecti* in northern Switzerland. A classification of plant communities advocated by the author depends chiefly upon their characteristics. The system contains (1) associations, (2) alliances, (3) orders, (4) classes, and, finally, (5) vegetative cycles ("Vegetationskreis"). Each of these units may be recognized and described by its characteristics which become more numerous as we proceed to units of a higher order. Several investigations now in progress will further demonstrate the advantages of this method.—*Author (translated).*

4715. BREWER, C. M. The bacteriological content of market meats. Jour. Bact. 10: 543-560. 1925.—Counts from different samples of the same cuts of meat usually varied more than those from different meats. Prepared meats usually contained more bacteria than fresh meats. Smoked meats contained a much smaller number of bacteria than fresh meats. Of the bacteria encountered in the different meats, the colon group predominated. The appearance of fresh meat could not be taken as an index to its bacterial content.—*Author's summary.*

4716. CAMBAGE, R. H. Plant invasion of a denuded area. Jour. and Proc. Roy. Soc. New South Wales 57: 334. 1923 [1924].—The earth and rock to a depth of 1-4 feet was moved from an area of 8 acres, 68 miles from Sydney, about 5 years ago, and as this denuded rock is in virgin forest and securely fenced it is proposed to observe the natural invasion of plant-life which may take place. At the end of 5 years 33 species had established themselves on this uninviting spot, composed of rock containing 78% silica.—(*From Australian Sci. Absts.*)

4717. CHRISTOPHERSEN, ERLING. Soil reaction and plant distribution in the Sylene National Park, Norway. Trans. Connecticut Acad. Arts and Sci. 27: 471-577. 22 fig. 1925.—Soil reaction in relation to the various plant associations of this high mountain area has been studied by the colorimetric method, the measurements being made with an accuracy of 0.1 pH unit. The various associations are characterized by lists of species, for each of which (among the higher plants) are indicated the degree of dominance and relative constancy. The soils vary from pH 3.6 to pH 7.1, each association being limited in its distribution to soils within a definite and relatively narrow range of reaction characteristic for each association. Definite data are presented regarding the H-ion concentration of the soils associated with various plant associations, as follows: (1) In the subalpine region, the forest associations having an undergrowth of dwarf shrubs and of herbs and grasses, respectively; the thicket, bog thicket, grass-sedge heath, dwarf shrub-lichen heath, dwarf shrub bog heath, sphagnum bog, Amblystegium swamp, and muck swamp associations; (2) in the alpine region, the thicket, dwarf shrub heath, grass-sedge heath, meadow, and swamp associations. With soils supporting specific associations, it was found in general that those of high acidity may be constant within a limit of 0.1 pH or less, while those near the neutral point may exhibit variations amounting to 1 or more pH units. The presence of a pan in the soil profile is correlated with an increase in the H-ion concentration of the raw humus in which most of the vegetation is rooted. The H-ion concentration of the soil is further influenced by the

character of the parent rock, granite and amphibolite giving rise to soils of relatively high acidity, while schists produce soils of nearly neutral reaction. Pot cultures showed that pulverized lepidomelane (potassium mica) causes a considerable decrease in the H-ion concentration of natural humus soil and sand. The term "Stand" is proposed as a designation for the plant association considered as a concrete vegetation unit. A convenient portable apparatus for measuring the H-ion concentration of lake-, river-, and swamp water in the field is described.—*G. E. Nichols.*

4718. CHRISTY, MILLER. The common teasel as a carnivorous plant. *Jour. Bot.* 61: 33-45. 1923.—*Dipsacus sylvestris* has a series of cups formed about the stem by the connate bases of the opposite leaves. These cups are often filled with water from rain and dew and numerous insects and other small creatures are drowned and decay in the water. It is believed that some substance in the water attracts the insects and that the plant absorbs the nitrogenous products of decay.—*Geo. D. Fuller.*

4719. CLOUGH, H. W. A systematically varying period with an average length of 28 months in weather and solar phenomena. *Monthly Weather Rev.* 52: 421-441. 1924.

4720. COSTANTIN, J. Remarques sur les cultures asymbiotiques. [Asymbiotic cultures.] *Rev. Path. Vég. et Entomol. Agric.* 12: 191-200. 1924.—*Rhizoctonia* as a symbiotic fungus is present in any healthy plant belonging to any one of 10,000 species of the Orchidaceae. When this symbiont is lacking the plant is depauperate and usually is unable to bloom.—*J. Dufrénoy.*

4721. GAUTHIER-LIEVRE, MME. H. Quelques observations sur la flore algale de l'Algérie dans ses rapports avec le pH. [The algal flora of Algeria in relation to pH.] *Compt. Rend. Acad. Sci. Paris* 181: 927-929. 1925.—It is found that in the climate of Algeria a pH below 7 is more favorable for development of fresh water algae. A list of algae in water of pH 6.5 is given. Desmids are especially abundant in pools of such acidity.—*C. H. Farr.*

4722. GRAHAM, S. A. The felled tree trunk as an ecological unit. *Ecology* 6: 397-411. 19 fig. 1925.—As the wood disintegrates and decays there is a succession of organisms. The early forms are xylophagous, the final forms are characteristic of the duff strata of forest soils. Food, moisture, and temperature are important factors affecting life. On each region of the log are typical fungi. In some cases there is a close symbiotic relationship between fungi and insects.—*T. J. Fitzpatrick.*

4723. HELMS, ANNA, OG C. A. JØRGENSEN. Birkene paa Maglemose. [The birches on Maglemoor.] *Bot. Tidsskr.* 39: 57-134. 29 fig. 1 map. 1925.—Maglemoor lies in the center of extensive woods in the north of Zealand. It was made a nature preserve in 1911 and since that date has been the subject of various ecological reports. The marked isolation of the locality is described and a sketch of its climate and soil conditions are given. Two species of birch are found here, both falling within the Linnaean *Betula alba*. *B. verrucosa* Ehrh. has trees of very uniform type whereas *B. pubescens* Ehrh. represents a polymorphic group. The specific rank of these trees and the occurrence of their hybrids has been much discussed. From their cytological behavior it is evident that the species are clearly distinct, *B. verrucosa* having 14 chromosomes and *B. pubescens* 28. In the reduction division of the hybrid, *verrucosa* × *pubescens*, which is present on the moor and recognizable by imperfect pollen, the 14 + 28 chromosomes appear in diakinesis and metaphasis as 21 gemini. Several trees of the *B. pubescens* type show chromosome numbers from 23 to 27 but no further determination of their true nature has been made. Descriptions and figures of typical individuals of the two species and of F₁ hybrids are given.—*B. pubescens* is the commonest tree on the moor and is found over the entire area. *B. verrucosa* does not thrive well on peat and is found chiefly about the border of the moor. No differences could be found in the anatomical structure of the roots of the 2 species but the leaf of *B. verrucosa* is the more xeromorphic. Measurements in height made in 1911 and again in 1923 permit comparisons of the rate of growth on different parts of the moor. Beneath and about the trees *Calluna vulgaris* is suppressed and *Eriophorum vaginatum* and *Vaccinium uliginosum* dominate. The latter is often confined to the south side of the tree. The fruiting varies much both as to number of fruiting trees, number of catkins and percentage of seed containing fruits in the catkins. The birches also exhibit a large amount of parthenocarpy and only by special examination

can the character of the fruit be determined. Figures showing the extent of variation are given and the influence of climate on variation is discussed. Fresh seed or seed preserved under dry conditions will not germinate below 20°C., while seed that has passed the winter under the natural conditions of varying temperature and moisture in the forest floor will germinate at 10°C. The same is true of the seed of *B. nana*. The morphology and ecology of the seedlings are discussed, particularly for the first critical winter. The conditions following cutting and during the resulting coppicing are also discussed.—*C. A. Jørgensen*.

4724. HUTCHINSON, A. H. The age and rate of growth of British Columbia trees in relation to ecological factors. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 453. 1925.

4725. ILGIN, W. S. Synthesis of starch in plants in the presence of calcium and sodium salts. Ecology 6: 333-351. 1925.—Plants frequently react to soil and this reaction affects their geographic distribution. Some plants are indifferent to the chemical composition of the soil; others prefer or require a definite soil type. Some plants tolerate high concentrations of Ca but suffer from small amounts of Na. Others are more susceptible to Ca than to Na, especially when growing on soils free from lime. The tolerance of various species of plants is very different even when grown under the same conditions. That the decrease in synthesis of starch is not due to osmosis is shown by the fact that no decrease takes place in solutions of saccharose of an osmotic concentration equal to the injurious solutions of Ca or Na. In small quantities Ca overcomes the effects of Na. Mn strengthens the action of Ca. Plants very resistant to a salt have a considerable advantage when growing on soils having this salt in abundance. Halophytes are more tolerant of high concentrations of sodium.—*T. J. Fitzpatrick*.

4726. JACK, R. L. The composition of the waters of the Great Australian Basin in South Australia and its significances. Trans. and Proc. Roy. Soc. South Australia 47: 316-321. 1923.

4727. KIRKPATRICK, R. The biology of waterworks. British Mus. Nat. Hist. Econ. Ser. 7. 1-58. Fig. 1-18. 1924.—An account is given of a typical water pipe fauna such as used to infect supply systems before slow sand filtration was used. There is also a description of the animals and plants which cause trouble, especially *Crenothrix*, one of the iron bacteria, that has from time to time given rise to water calamities. Lastly, a brief description is given of a typical slow sand filter such as is in use in the London area, with an account of the surface film, formed mainly of diatoms, which strains off and oxidizes organic impurities.—*Author*.

4728. KORSTIAN, C. F. Density of the cell sap of plants in relation to environmental conditions. Jour. Elisha Mitchell Sci. Soc. 39: 63-69. 1923.—“These studies showed that the osmotic concentration of the cell sap of plants may be used as an index of habitat in correlating the great complex of habitat factors with the physiological responses of the plant. The density of the sap of a species, however, is not constant. It may be influenced by any of the environmental conditions affecting transpiration, the products of photosynthesis or the supply of available soil moisture. Osmotic pressure in plants is more rapidly changed by fluctuations in the moisture conditions of the habitat than by temperature or light. During the growing season the lowest sap concentrations occur in those mesophytic plant associations which are successional the most highly developed with reference to an adequate supply of available moisture and in which the complex of conditions is most favorable to plant growth. On the other hand, the highest densities occur on the most adverse sites, either the driest or the most saline.” Coniferous evergreens in winter show low sap density, while foliose evergreen shrubs show high concentration. This is supposed to be due to the fact that with the advent of winter the starch in conifers is converted into oil or fat while in the others it is converted into sugars.—*W. C. Coker*.

4729. LAWRENCE, J. V., AND J. ARTHUR HARRIS. A practical method for the determination of the chloride content of plant tissue fluids. Ecology 6: 391-393. 1925.—The determination of the chloride content of plant tissue fluids is important because of its rôle in the development of osmotic concentrations. It has been shown that the physico-chemical properties of leaf tissue fluids vary in correlation with conditions of the environment. The kind and concentration of ions in the soil are important factors. Since the chlorides are widely

spread, abundant, and highly soluble it appears probable that they are most important in affecting the osmotic concentration of tissue fluids. A new method to determine the chloride content of plant fluids that is adapted for field use and can be used on fresh or preserved fluids, is fully described.—*Herbert C. Hanson.*

4730. LÜDI, WERNER. Die Ergebnisse von Verdunstungsmessungen im Lauterbrunnental und in Bern in den Jahren 1917–1920. [Evaporation measurements in the valley of Lauterbrunnen and in Berne 1917–1920.] Veröffentl. Geobot. Inst. Rübel. Zürich (Festsch. Carl Schröter) 3: 185–204. 8 fig. 1925.—The measurements were made with Livingston atmometers at Berne (530 m.), Lauterbrunnen (800 m.), Wengen (1270 m.), Mürren (1640 m.), and Eigerglacier (2330 m.). The instruments were mounted about 70 cm. above the surface of meadows or large open spaces and daily readings were made from May to October. Results show that the evaporating power of the air in this valley increases steadily with increase in altitude. The station at Berne, in the foothills of the Alps, gives only slightly lower readings than those of the mountain station at Mürren. The mountain stations show greatest variation, the valley station least. In the valley and foothill stations the maximum was reached during June or July, in the mountain stations it came somewhat later, sometimes not until September, and the first days of October may still show high readings. The evaporation curve is generally parallel to the reciprocals of the relative humidity curve. The evaporation values at higher altitudes are largely influenced by the wind and a dry wind (Föhn) may quite counteract the effect of decrease in temperature, especially in the autumn. In addition to these measurements in the open, determinations were made in various plant associations.—*Author (translated).*

4731. LÜDI, WERNER. Probleme der botanischen Forschung in den Alpen. [Botanical problems in the Alps.] Jahrb. Schweiz. Alpenklub [Berne] 55: 179–194. 1921.—The author gives a short review of the development of botanical investigation in the Alps, formulates and classifies some of the problems awaiting investigation and suggests methods for their solution.—*Author (translated).*

4732. McDougall, ERIC. The moisture belts of North America. Ecology 6: 325–332. 3 fig. 1925.—Climate largely controls the distribution of plant formations, precipitation and evaporation being prime factors. It is assumed that evaporation is proportional to mean temperature. Using mean temperatures as abscissae and mean precipitation as ordinates, curves may be drawn separating the world's climates into moisture belts corresponding to thermal zones and agreeing in their outlines with the principal types of vegetation, as desert, grassland, forest, etc. Some additional factors must be considered, as in arctic climates the snow cover, in temperate climates the rainy season, in tropical climates the dry season. Five moisture belts are considered: The arid is desert; semi-arid, semi-desert; semi-humid, grassland; humid, forest; and wet, luxuriant forest. Grasses flourish in the semi-arid belt where summer is the wet season and they tend to invade the humid belt. Winter rains are of little use to vegetation unless to evergreen conifers. Topographic and edaphic conditions are factors affecting the amount of moisture as well as the distribution of vegetation.—*T. J. Fitzpatrick.*

4733. MAGROU, J. Rôle des champignons endophytes dans la culture des Orchidées. [Rôle of endophytic fungi in cultivating Orchidaceae.] Rev. Path. Vég. et Entomol. Agric. 12: 180–189. 1924.—The 3 main species of symbiotic Rhizoctonias described by Noel Bernard (*R. repens* from most indigenous and imported Orchidaceae, *R. lanuginosa* from *Odontoglossum* and *R. muoroide* from either *Phalaenopsis* or *Vanda*) have been used by growers to inoculate seedlings. At length the ability of these fungi to grow symbiotically within their respective hosts became lower and lower but this ability could be restored by inoculation into living embryos.—*J. Dufrénoy.*

4734. MOLISCH, H. Über die Symbiose der beiden Lebermoose *Blasia pusilla* L. und *Cavicularia densa* St. mit *Nostoc*. Bot. Beobacht. in Japan. IX. [Symbiosis of the two liverworts *B. pusilla* and *C. densa* with *Nostoc*.] Sci. Rept. Tokoku Imp. Univ. Ser. IV, Biol., 1: 169–188. pl. 3. 1925.

4735. MØRKVED, V. D. Litt om skogstraernes invandring og skoggrensen i Namdalen. [The invasion of forest trees and the forest limits in Namdal.] Tidsskr. Skogsbruk 31: 311–

323. 1923.—Directly after the glacial period, sphagnum moss came in first with some willow species and dwarf birch (*Betula nana*). When the climate became milder aspen (*Populus tremula*), *Betula odorata*, *Alnus incana*, *Pinus silvestris* came in from the south. Still higher temperatures let oak, *Alnus glutinosa*, *Betula verrucosa* and *Ulmus montana* come in. At the end of the oak period spruce invaded the country. A lowering of temperatures caused this change. Spruce composes the upper part of the coniferous tree limit.—W. H. Meyer.

4736. NIKITINE, B. The biological conditions of the Black Sea observed in 1923–25. *Nature* 116: 863. 1925.—This is a brief note reporting the variations with respect to depth.—O. A. Stevens.

4737. ØDUM, H. De jyske Hedesletters Natur. [The heather plains of Jutland.] *Nat. Verden* 9: 193–219. 10 fig. Copenhagen, 1925.—According to the investigations of P. E. Müller (K. Danske Vidensk. Selskabs Biol. Medd. 4²: 1924.) the hardpan of the plains forms extended horizontal strata which are interrupted where larger differences in the level occur. The iron hardpan in the hills is an ordinary podsol formation parallel to the surface, while the humus hardpan of the melting plains is due to a late glacial podsol formation in a region which must be characterized as tundra. The taps which extend from the last kind of hardpan down into the lower strata of sand are due to frost cracks formed during the tundra period. In the kernel of these taps, fragments of the tundra plants occur. The characteristic coloration of the sand above the hardpan is due to humus translocations during the seasonal thawing and freezing of the tundra. The soil types of the heather plains have mainly been fixed in the late glacial period and the present types of vegetation—*Calluna* heather, oak shrubs, and birch forest—are thus determined by climatic relations of that period because the soil has preserved its characteristics.—Ernest Gram.

4738. OSTENFELD, C. H. Plants from Beata Island, St. Domingo. I. General remarks on the vegetation. *Dansk. Bot. Ark.* 4: 1–5. 1924.—A brief account of the vegetation of the island is given. The vegetation throughout shows a pronounced xeromorphism due to the dry climate and the constant, strong winds.—P. D. Strausbaugh.

4739. OSTENFELD, C. H., AND G. NYGAARD. On the phytoplankton of the Gatun Lake, Panama Canal. *Dansk. Bot. Ark.* 4¹⁰: 1–16. 20 fig. 1925.—The paper consists of an introduction by Ostensfeld showing that the plankton is of the typical fresh-water variety, the passage of many ships being without influence, followed by an annotated list of species by Nygaard. The dominance of desmids is characteristic. Comparisons are made with the plankton of tropical lakes in South America, Africa and Australia. The following are new: *Clathrocystis robusta* H. W. Clark, is equivalent to *Microcystis robusta* (Clark) Nygaard n. comb.; *Peridinium gatunense* Nygaard n. sp.; *Staurastrum anatinum* Cooke et Wills var. *convergens* Nygaard n. var.; *Staurastrum sparsidentatum* Nygaard n. sp.; and *Staurastrum Ostensfeldii* Nygaard n. sp.—C. A. Jørgensen.

4740. RASMUSSEN, R. Fenologiske Notiser fra Farøerne. [Phenological notes from the Faröes.] *Bot. Tidsskr.* 38: 364–387. 1925.—The observations covering 1904–1923 contain the dates for the initiation of the flowering of 169 plants. More detailed information is given for a smaller number of species. This includes the maximum and the end of flowering and the time of the ripening of fruit.—C. A. Jørgensen.

4741. RAUNKIAER, C. Eremitageslettens Tjerne Isoreagentstudier 1. [The thorn-bushes of the Eremitage-plain. Isoreagent-studies 1.] *Det. Kgl. Dansk. Videnskab. Selskab. Biol. Meddel.* 5¹: 1–76. 17 fig. 1925.—The individuals of a Linnæan species, although alike in most characters, may differ in some, the differences being due to variations in external conditions or to differences in the genotypical constitution of the plants. The minor groups of a Linnæan species, distinguished on the latter basis, the author names "Isoreagents," that is, individuals. These, because of their identical genotypical constitution, react in the same way (are alike) towards external conditions. The characters, which vary within the Linnæan species, are most frequently subject to Mendelian segregation and are termed "apomeres" by the author. An analysis of the thorn-bush vegetation of the Eremitage-plain is then given on this basis. Two species, *Crataegus oxyacantha* and *C. monogyna*, are present, together with many intermediate types, probably hybrids. The 556 individuals were examined in respect to (1) habit of growth, (2) form of leaf, (3) leaf venation, (4) sepals, (5) form and hairi-

ness of fruits, and (6) number of styles. Characters 3, 4, 5, and 6 were investigated statistically and interesting relations brought out. Much stress is laid upon number of styles, more than 100,000 flowers being counted. Three of the intermediate types, which are easily recognized and abundant in the locality, are described as *C. eremitagensis*, *C. Schumacheri* and *C. raavadensis*.—*C. A. Jörgensen*.

4742. RIETZ, G. EINAR DU, UND H. GAMS. Zur Bewertung der Bestandestreue bei der Behandlung der Pflanzengesellschaften. [The evaluation of indicators in the treatment of plant associations.] Vierteljahrsschr. Naturf. Ges. Zürich. 69: 269-280. 1924.—The authors think that "character species" or indicators are not strictly confined to 1 association. A considerable number of species of plants which have a definite association in one region may have quite a different one in another, as, for example, *Lycopodium complanatum*, which is given by Braun as one of the most constant species of the *Pinetum silvestris*, occurs in Scandinavia also in spruce-birch forests. Numerous cases of this kind are given.—*John H. Schaffner*.

4743. SMITH, H. A preliminary report on botanical investigation in South and Central Shansi. China Jour. Sci. and Arts 3⁸⁻⁹: 449-454, 503-509. 6 pl. 1925.—A brief discussion is given of past botanical work in Shansi and of the climatic conditions there. The report includes notes on the topography of the various areas covered and the names of some typical plants from each area; 1150 different species of higher plants were collected.—*Albert N. Steward*.

4744. STOCKER, OTTO. Bau und Lebensbedigungen der Heide- und Hochmoorpflanzen in neuer Auffassung. [A new concept of the structure and ecological relations of heath and moor plants.] Naturwissenschaftliche Monatsheft 5: 69-74. Fig. 1-2. 1924.—Schimper's explanation of the xeromorphic structures of heath plants as physiological xerophytes was shown by the experiments of Montfort to be erroneous. Stocker's investigations show that although the transpiration from the leaves of the Ericaceae is low per unit area these plants have a very large transpiring leaf surface and the ratio of transpiration to weight of roots is decidedly high. This ratio for *Calluna vulgaris* is 1.4 as compared with 0.7 for *Fragaria* and 0.08 for a cactus. The Ericaceae should therefore, be classed as mesophytes. They are able to grow in habitats of low humidity and low soil moisture only when they are well protected from the wind. The xeromorphic structure of the Ericaceae leaves is explained on the basis of being "anomorphic," that is, protected against wind.—*Hilda Joseph*.

4745. SUMNER, F. B. Some biological problems of our southwestern deserts. Ecology 6: 352-371. 1925.—The characteristic features of the southwestern deserts are briefly described and the relation of animal life, mice especially, to these features is discussed. Desert mammals are probably not unusually well adapted to endure high temperatures nor do desert rodents differ greatly in water requirements from their nearest relatives in humid regions. The dependence of rodents upon plants for food and water is shown. Most of the desert mammals appear to show no special adaptation to extreme aridity, except the conspicuously pale color of skin and hair.—*Herbert C. Hanson*.

4746. TITS, D. Le Sahara occidental. Contribution phytogéographique. [Western Sahara.] Bull. Soc. Roy. Bot. Belgique 58: 39-90. Illus. 1925.—After reviewing the geology and climatology of the region the floristics and phytogeography are discussed and plant lists are given. The description of *Massartiana Titsiana* by R. Maire, dedicated to J. Massart and to the author is reproduced. Four districts in the basin of the Saoura are studied ecologically and floristically and similar attention is given to the Atlantic slope of the Sahara. The distribution of *Argania syderoxyylon* Roem. & Schult. is considered. The conclusions emphasize the necessity of further studies.—*E. de Wildeman* (translated).

4747. WELLS, B. W. Savannah and sand ridge plant communities. (From Proc. North Carolina Acad. Sci.) Jour. Elisha Mitchell Sci. Soc. 39: 14-15. 1923.—The savannah is a level undrained area with the water table at or near the surface but showing xerophytic conditions in its vegetation; and the sand ridge community occurs on well drained coarse sand mixed with humus. The former is largely characterized by herbaceous plants with the apical bud buried beneath the surface.—*W. C. Coker*.

4748. WELLS, B. W. The ecological position of the eastern North Carolina pine communities. (From Proc. North Carolina Acad. Sci.) Jour. Elisha Mitchell Sci. Soc. 40: 103-

104. 1924.—*Pinus taeda* forms 2 types of communities with regard to succession; (1) edaphic climax communities on sterile soils and (2) developmental communities on fertile soils. The former occur chiefly in the upland areas of the Coastal Plain; the latter, on the valley slopes of the Piedmont and upper Coastal Plain. The principal factor in the first case is superior tolerance of sterility by the pine, giving it an opportunity to overtop the more exacting broad-leaved trees. Disturbance of the original climax forest and tolerance of shade by broad-leaved trees are the principal conditions leading to the 2nd community. As the pine is practically as mesophytic as most of the oaks, and occurs as a dominant in certain pine associations of the "deciduous mesophytic forests," it is thought illogical to place these communities in different formations rather than as associations of the single great mesophytic forest formation of the upland areas. What is said of *P. taeda* is in large measure applicable to *P. palustris*.—W. C. Coker.

4749. WILLIAMS, C. F. Morphological ecology of savannah plants. (From Proc. North Carolina Acad. Sci.) Jour. Elisha Mitchell Sci. Soc. 41: 17. 1925.—*Campulosis* is one of the dominant grasses of wet savannahs. However, it shows throughout its body a very distinct adaptation to xerophytic conditions, thus confirming previous observations that the savannah, while physically wet, is "physiologically dry" (see this issue entry 4747.)—W. C. Coker.

4750. ZIMMERMANN, RUD. Über die Pilznahrung höherer Tiere. [The mushroom diet of animals.] Zeitschr. Pilzkunde 5: 80-88. 1 fig. 1925.—Further examples are given of the collection, consumption and storage of various fleshy fungi by squirrels, mice and other animals.—F. Weiss.

VEGETATION

4751. ADAMSON, R. S. The native vegetation of Kirstenbosch. Jour. Bot. Soc. South Africa 1925¹¹: 19-23. 4 fig. 1925.—This is a general description of the principal types of vegetation occurring in the vicinity of the National Botanic Garden of the Union of South Africa. Some of the problems of primary and secondary succession are discussed and 3 climax associations are distinguished and briefly described. (1) On the lower slopes of Table Mountain when the soil is of good quality "Silver tree woods" develop, consisting of a rather open stand of *Leucodendron argenteum* with species of *Protea* growing as shrubs beneath the trees, mingling with some undershrubs; (2) On a poorer soil of the slopes up to 2700 feet the "Protea bush" develops as a scrub association 4-15 feet high, composed of *Protea lepidocarpodendron* and other species of the same genera, together with shrubby *Leucodendron* spp., *Erica* spp., and *Aspalathus* spp. (3) Finally, on the more sheltered slopes and in the ravines there is found "The forest" composed of broad scherophyll trees of moderate height forming a rather dense canopy, with an undergrowth of broad leaved herbaceous plants and ferns. The trees are largely species of *Olea*, *Olinia*, *Cunonia*, *Podocarpus*, *Ocotea* and *Curtisia*.—Geo. D. Fuller.

4752. BÖRGESSEN, F. Contributions to the knowledge of the vegetation of the Canary Islands (Teneriffe and Gran Canaria), with an appendix, Lichenes Teneriffenses, by EDV. A. VAINIO. D. Kgl. Danske Videnskab. Selskab. Skrift. Naturv. og. Math. 6: 285-398. Fig. 1-57. 1924.—The vegetation is grouped according to habitats, and general descriptions are given of each group together with analyses of the associations on the basis of the life-forms, leaf-sizes and biological spectra of Raunkiaer. The groups comprise: (1) Sandy beach vegetation with a dominance of chamephytes and therophytes. Low trees of *Tamarix Gallica*, 4-6 m. high with gnarled trunks are conspicuous as are also the succulent leaves of *Zygophyllum Fontanesii*. (2) Dune vegetation with shrubs predominating. (3) Rocky shore vegetation characterized by shrubs, chamephytes and hemi-cryptophytes, several very succulent Euphorbias being common. (4) Vegetation of dry flats and hills, open semi-desert associations in which shrubs are dominant. (5) Vegetation of rocky slopes, similar to the preceding with a large percentage of annuals. (6) Montane vegetation including laurel wood, pine wood and maqui.—The most important portions of the article are the notes on the peculiarities of growth and structure of a large number of the more prominent plants and the biological spectra of the various associations.—The appendix contains an annotated list of the lichens collected on the islands. The following are described by Vainio as new; *Usnea atlantica*, *Lecanora orotavensis*, *Pertusaria teneriffensis*, *P. inconveniens*, *Lobaria immixta*, *Roccella teneriffensis*, *R. Boergesenii*, and *Diploschistes aggregatus*.—Geo. D. Fuller.

4753. BRAUN-BLANQUET, J., ET RENÉ MAIRE. *Études sur la végétation et la flore marocaine.* [The vegetation and flora of Morocco.] Bull. Soc. Bot. France 68: 1-244. Pl. 1-10, 1 map. 1921. appearing in 1925.—(See also Bot. Absts. 15: Entry 3359.)—The authors distinguish plant communities due to the influence of man and domestic animals, those dependent on soil peculiarities and those limited by climate only, these last being the climatic climax types of the region. Attention is also given to indicator vegetation as pointing out the economic possibilities of the region. Unfortunately the climax associations of Morocco have almost entirely disappeared. The systematic lists of the plants collected include not only seed plants but also Thallophytes.—From abstr. by J. Beauverie.

4754. DU RIETZ, G. EINAR. *Die Hauptzüge der Vegetation der Insel Jungfrun.* Führer für die vierte I. P. E. [Vegetation of the Jungfrun Island (southeastern Sweden). Guide for the fourth international phytogeographic excursion.] Svensk Bot. Tidskr. 19: 323-346. 7 fig. 1925.—The distribution of the different types of vegetation is determined principally by the intensity of the wind and the spray of salt water as well as by the occurrence of rocks and loose stone blocks. The outermost parts of the shores belong to a marine region of algae which may be divided into different zones, common to the whole Baltic coast of Sweden. Below a depth of about 7 m. red algae dominate (for example, *Furcellaria* and *Rhodomela*). Above this limit *Fucus vesiculosus* and *Pylaiella littoralis* are the dominating algae. The littoral zone between the 2 last-mentioned lines is characterized by filiform summer-annual algae (*Ceramium*, etc.) A narrow supra-littoral zone Cyanophyceae follows next. Above the marine zone lies a hygro-halophytic region (land-vegetation), the upper limit of which is determined by the limit of storm waves. The lowest zone of this region is characterized by *Verrucaria maura* and the higher zones by other lichens, such as *Caloplaca marina* or *Lecanora quartzia*. An aero-haline region, with *Calluna* and *Empetrum* heaths and lichens associations on the rocks and larger bushes in the crevices, follows next. On such rocky areas as are protected against the salt spray, forests of birch, pine and spruce occur. Ground with loose stone blocks is covered with a dense forest, principally of *Quercus robur*.—O. Heilborn.

4755. DU RIETZ, G. EINAR. *Die Hauptzüge der Vegetation des äusseren Schärenhofs von Stockholm.* Führer für die vierte I. P. E. [Vegetation of the outer archipelago of Stockholm. Guide for the fourth international phyto-geographic excursion.] Svensk Bot. Tidskr. 19: 347-369. 10 fig. 1925.—The Swedish coasts are mostly surrounded by archipelagos ("skärgårdar") of smaller or larger islands. The largest of these archipelagos is that outside Stockholm, the southern part of which is characterized by long chains or rows of islands running parallel to the coast line. The innermost of these rows contains islands with much lime in the soil and a very rich vegetation. Outside these islands there are rows of islands with pine forest and, finally, at the outer edge of the archipelago there lie smaller, isolated groups of islets without forests. In the northern part of the Stockholm archipelago the islands are more irregularly distributed, the changes in vegetation are more gradual and the phytogeographic zones are often very distinct. There is a maritime birch zone outside the pine forests in the inner parts of the archipelago and, again, a bare zone in the outermost parts. These phytogeographic zones are described in detail. The pine zone occupies the largest area, pines covering the rocky grounds, broad-leaf-trees and meadows characterizing the valleys with loose soil, rich in lime, while spruces grow in valleys poor in lime. In the maritime birch zone the birches cover the rocky ground, while in the small valleys aspen, ash, alder, herbs and ferns, etc. grow. In the outermost zone, heaths of 3 types (with *Calluna*, with *Empetrum* and *Vaccinium uliginosum* and with grasses) are the characteristic plant associations. The flora of the birch zone and of the bare zone has several species of a more northern distribution. On the other hand, this flora lacks a number of species that occur in the inner parts of the archipelago.—O. Heilborn.

4756. JAHANDIEZ, EMILE. *Les forêts de cèdres du Moyen Atlas.* [The cedar forests of the Middle Atlas, Morocco.] Bull. Soc. Le Chêne 17: 1076-1084. 1922.

4757. McDougall, W. B. *Forests and soils of Vermillion county, Illinois, with special reference to the "striplands."* Ecology 6: 372-379. 1 pl. 1925.—The region is mostly a level plain, modified by erosion by the tributaries of Vermillion River. On the bottomlands a coal bed is frequently only 10-20 feet below the surface. In this region 6 associations are

recognized; (1) The basswood-elm, found on uplands on brown silt loam soil; (2) the beech-maple-red oak on uplands on yellow-gray silt loam; (3) the oak-hickory on yellow silt loam; (4) the mixed hillside on yellow silt loam; (5) the elm-sycamore-maple on bottomlands; and (6) the cottonwood-willow along streams. Reasons are given for this distribution. When bare areas are created on bottomlands by strip mining, annual weeds are usually the first invaders but under favorable conditions the bottomland forest association is reestablished in about 24 years.—*T. J. Fitzpatrick.*

4758. OSTENFELD, C. H. Om Plantevæksten paa Grønlands Nordkyst og dens Livsvilkaar. [Vegetation and growth factors on the North coast of Greenland.] *Nat. Verden* 9: 289-311. Fig. 1-5. Copenhagen, 1925.—The 2nd Thule expedition, headed by Knud Rasmussen and with Thorild Wulff as a botanist, in the year 1917 investigated the North coast of Greenland. The explorers encountered many difficulties and it was for Wulff his last voyage. His collections and note-book were saved and have been discussed by Ostenfeld and others. The collections comprise 67 species of mosses, 64 lichens, 71 freshwater algae, 46 fungi, 68 phanerogames, and 2 Equisetae. A detailed report by Ostenfeld is given in *Meddel. om Grønland* 64: 1923. (See Bot. Absts. 14, Entry 2371.) The plants during the short summer are exposed to uninterrupted, and frequently very strong light. The air temperature does not reach zero (Celsius) before June and only July has a positive average temperature, but due to insolation the temperature of the plants may rise 20 degrees above that of the surrounding air. The air is dry, the soil cold and the plants xerophile. All the phanerogames are perennials, many of them forming cushions, and only 10 have subterranean horizontal rhizomes. The annual growth is minute, but the plants live many years, thus a stem of *Salix arctica* only 2 cm. thick showed 50 annual rings. In many plants the buds winter over in a highly developed state and even open blossoms may live during a 10-month winter and continue flowering the next June. In an ice-free rocky district surrounded by inland ice, a so-called nunatak, 8 species of phanerogames were recorded.—*Ernst Gram.*

4759. OSTENFELD, C. H. Vegetation of North Greenland. *Bot. Gaz.* 80: 213-218. 1925.—This is a general description of the vegetation of Greenland north of 76°N. based on the collections and notes of the late Thorild Wulff. For content see preceding Entry.—*Geo. D. Fuller.*

4760. PITARD, C. J. Contribution à l'étude de la végétation du Maroc désertique et du Maroc central. [The vegetation of desert and the central parts of Morocco.] *Bull. Soc. Bot. France* 68: 245-279. 1921 [1925].—The Morocco desert stretches from the northwest between the boundaries of Algeria and the Atlas Mountains of Morocco. The latter frontier rises as a mountain chain in which some of the chief elevations are Djebel Zenaga 1090 m.; Djebel Tagla, 1155 m.; Djebel Sidi Youssef, 1115 m.; Djebel Grouz, 1575 m.; and Djebel Onazzani, 2000 m. This range extends some 100 km. from east to west. It is paralleled by a 2nd chain, the Djebel Mais and Djebel Orrira, 1690-2000 m. North of this is Djebel Melah and Djebel Feraridj, 1600-1900 m. These massifs exposed to wind and erosion have extremely bare slopes and ridges separated by valleys occupied by stream beds. These become occupied by boulders, gravel and sand as erosion progresses and upon the different soils various types of vegetation develop. The lower portions of the valleys, called "Dayas," are full of water in the winter changing to a semi-fluid saline mud in the spring and by desiccation to a salt desert in summer. A few cultivated oases occur watered by small streams. Dunes are rare in the Morocco deserts. The principal plant associations of the dunes, the sandy steppes, the oases, the dayas, the rocky steppes and the mountain slopes are described. Central Morocco includes the region between Fez and the middle (Moyen) Atlas. The climate of the Fez plain is rather rigorous in winter and hot in summer. The vegetation is described and the character of the extensive collections are indicated.—*H. des Gayets (translated).*

4761. RIKLI, M., UND E. RUBEL. Über die Sommervegetation von Korsika. [The summer vegetation of Corsica.] *Verhandl. Naturf. Ges. Basel* 35: 186-207. 4 pl., 3 fig. 1923.—The summer temperature of the island is not higher than that of many places in northern Europe. The rainfall varies from 584 to 1651 mm., coming mostly in early spring and late fall. The summers are very dry. The lower altitudes are covered with a macchia of *Arbutus unedo*, *Erica arborea*, *Pistacia lentiscus*, and *Quercus ilex*. Geophytes appear only in the fall. Grazing by sheep, goats and cattle together with the frequent fires to make spaces for orchards,

vineyards and fields have destroyed much native vegetation. Recently cultivated fields have been abandoned on account of the scarcity of laborers and are reverting to macchia. On the mountain slopes are pure and mixed stands of *Pinus nigra* and *Fagus silvatica*. The alpine regions are also overgrazed. Not less than 13 endemics are reported, among which are *Alnus suaveolens*, *Plantago insularis*, *Ranunculus Marschlinii*, and *Aronicum corsicum*.—*Blanche McAvoy*.

FLORISTICS

4762. ARNELL, H. WILH. Anteckningar om södra Ångermanlands kärlväxter. [Vascular plants from south Ångermanland (province in Sweden).] Svensk Bot. Tidskr. 19: 339-401. 1925.—It contains lists of plant localities.—*O. Heilborn*.

4763. AUDAS, J. W., AND P. F. MORRIS. Plant immigrants. Jour. Dept. Agric. Victoria 23: 109-111. 1925.—A list of species, recorded for the first time in 1923-1924, that may become bad weeds, is given.—*Wm. E. Lawrence*.

4764. BRAUN-BLANQUET, JOSIAS. Essai sur les notions d'“Element” et de “territoire” phytogéographiques. [The phytogeographical concepts of “element” and “territory.”] Arch. Sci. Phys. et. Nat. 5me Periode 1: 497-512. 1919.—The author discusses the confusion resulting from the different ways in which the term “element” has been used and recommends that it be limited to “the floristic and phytosociological expression of a definitely limited area; it embraces the species and the phytogeographical population of a definite region or domain.” He also discusses the criteria that should determine the regional divisions of phytogeography and recommends that such divisions should be, in order of magnitude, the (1) region, (2) domain, (3) section (“secteur”), (4) sub-section (“sous-secteur”), (5) district, and (6) sub-district (“sous-district.”)—*Geo. D. Fuller*.

4765. ERDTMAN, G. Växtlokaler från Halland och sydvästra Västergötland. [Plant stations from Halland and south-west Västergötland (provinces in Sweden).] Svensk Bot. Tidskr. 19: 370-379. 1925.

4766. FRIES, E. TH. Några gotländska växtlokaler. [Some plant localities in Gotland (province in Sweden).] Svensk Bot. Tidskr. 19: 426-429. 1925.

4767. HELMS, JOHS. Gamle Taks i Danmark. [Old yew-trees in Denmark.] Kgl. Veg. og Landbohøjskoles Aarsskrift København, 1925: 186-247. 41 fig. 1925.—Denmark is within the range of *Taxus baccata* and in earlier days the trees were undoubtedly of common occurrence in the forests. It gradually decreased and from 1700 to 1865 was considered extinct. This year, however, an English engineer, Robt. Rowan, discovered it at Munkelbjerg in Jutland, the only place in Denmark where the yew is still growing wild. The locality and the trees found there are described in this paper, which also contains a survey of the big yews found in the gardens and parks of the manors. The biggest is at Bromolle in Søllund, with a height of 12 m. and a trunk circumference of 2.82 m.—*O. A. Jørgensen*.

4768. HERS, J. Notes on the willows and poplars of North China. China Jour. Sci. and Arts 3¹: 387-392. 3 pl. 1925.—Data are given relating to the habitat, use, cultivation and Chinese names of the following species: *Salix matsudana*, *S. purpurea* var. *stipularis*, *S. cheilophila*, *S. viminalis*, *S. wilsonii*, *S. wallichiana*, *S. glandulosa*, *S. heterochroma*, *S. paraplesia*, *S. phylicifolia*, *Populus tomentosa*, *P. simonii*, *P. suaveolens*, and *P. tremula davidiana*.—*Albert N. Steward*.

4769. HOUZEAU DE LEHAIE, S. Contribution à la codification de l'étude de la flore indigène. [Rules for the study of native floras.] Bull. Soc. Roy. Bot. Belgique 58: 9-10. 1925.—Rules are given for experimental, illustrative and herbarium studies.—*E. De Wildeman (translated)*.

4770. MCCOLL, W. R. Data on *Scolopendrium vulgare* J. E. Smith. Amer. Fern Jour. 15: 90-93. 1925.—The writer describes the habitat of this fern at Owen Sound, Ontario, the only known home of *Scolopendrium* in Canada.—*E. R. Walker*.

4771. RÜBEL, EDUARD. Curvuletum. Beibl. Veröffentl. Geobot. Inst. Rübel Zürich 1: 1-15. 1925.—This association, characterized by *Carex curvula*, is the main turf type of vegetation in Switzerland between 2400 and 3000 m. and as a more fragmentary community it extends to higher altitudes. A discussion of its constants and its accessory species is given. Its spring

aspects and its cryptogamic components are not yet well understood. The ecological range of the association seems rather narrow. It occurs over dense layers of humus on level portions of passes, on plateaus and on south slopes. With wind exposure it gives way to *Elynetum* and on dry areas is invaded by *Sesleria disticha*. The distribution of this association in different parts of Switzerland is given.—*Blanche McAvoy*.

4772. RUPP, H. Habits of certain Orchids. Australian Nat. 5: 166-171. 1924.—Details are given of the distribution in Australia and Tasmania on orchids of the genera *Eriochilus*, *Chiloglottis*, *Corysanthes*, *Drakaea* and *Pterostylis*, with descriptions of local variations due to surroundings and climatic conditions.—(From Australian Sci. Absts.)

4773. SCHONLAND, S. Althenia in South Africa. Kew Bull. 1924: 365-366. 1924.—Records are given of the finding of a form closely related to *Althenia filiformis* near Port Elizabeth, in a place which is often flooded with sea water at high tide. The known range of the genus is southern Europe and northern Africa.—*T. J. Fitzpatrick*.

4774. SIM, ROBERT J. Observation on the climbing fern of Pennsylvania. Amer. Fern Jour. 13: 40-42. 1923.—*Lydodium* forms the dominant green of the undergrowth on many acres of ground in Luzerne County, Pennsylvania. It grows only in the valley on sloping banks and terraces within 50 feet of creek-level. It is in 2nd-growth thickets without large trees.—*E. R. Walker*.

4775. SMITH, JESSE F. The restoration of *Isanthus brachiatus* to the flora of Connecticut. Rhodora 27: 189-190. 1925.—*Isanthus brachiatus*, hitherto somewhat doubtfully ascribed to Connecticut, was found in 1925 at Suffield, growing in disintegrated shale.—*S. F. Blake*.

4776. SZYMKIEWICZ, D. Études climatologiques. V. Comment caractériser l'humidité d'un climat? [Climatological studies. V. How to characterize the humidity of the climate.] Acta Soc. Bot. Poloniae 2: 239-264. 7 pl., 4 fig. 1924-1925.—The problem divides itself into 2 parts; (1) the humidity of the air, and (2) precipitation. The author proposes to characterize the humidity of the air as the "evaporation index" expressed by the formula $i = (p' - p) \frac{273 + t}{273} \frac{P - p'}{P}$ where " p " is the tension of the water vapor at the temperature of the air t , P is the barometric pressure and p' the vapor tension of the air. This formula expresses very exactly the influence exerted on evaporation by all meteorological factors except wind and radiation. The values of the evaporation index agree very closely with the rate of evaporation measured directly by atmometers. The best way of evaluating the efficiency of precipitation is by Transeau's hygrometric ratio or rainfall-evaporation ratio. It is easy to calculate this ratio by means of the evaporation index without having to measure the evaporation directly. Transeau's method may thus be applied to all the countries of the world and it will show that there is a close relationship between the hygrometric ratio and the ecological character of the vegetation.—*Author (translated)*.

4777. TURRILL, W. B. On the flora of the Gallipoli peninsula. Kew Bull. 1924: 287-299. 1 fig. 1924.—A history of previous explorations beginning with Tournefort is given and the geology and topography are followed by types of vegetation and their distribution. There is some notice of climate and flower sequence. The floristic composition and geographical distribution receive much attention.—*T. J. Fitzpatrick*.

4778. VERHULST, A. Quelques échappées sur la végétation des terrains triasiques en Belgique. [Fugitives in the vegetation of the Triassic regions of Belgium.] Bull. Soc. Roy. Bot. Belgique 58: 96-98. 1925.—A short note on the distribution of certain plants and on the differentiation of the Triassic flora.—*E. de Wildeman (translated)*.

4779. WILLIAMS, R. O. Notes on the plants of Patos. Kew Bull. 1924: 273-280. Pl. 1-4. 1924.—Patos is a small island of about 170 acres, nearly 3 miles off the coast of Venezuela and 24 miles from Port of Spain. Descriptions of the plant associations are given, followed by an annotated list of 27 species collected during a visit from March 17 to 21, 1924.—*T. J. Fitzpatrick*.

4780. WÜNSTEDT, KNUD. Charlottenlund Skov. En botanisk-historisk studie. [The wood at Charlottenlund. History of the vegetation.] Bot. Tidsskr. 38: 340-363. 1925.—In 1684 the Danish botanist, Peder Kylling, published a list of the plants found in the wood at Charlottenlund. The wood is close to Copenhagen and has for the last 50 years been a popular

place for weekend and Sunday picnics. It is evident from the plant lists now given by the author that many rare or interesting plants have disappeared. A detailed discussion on some of them is given.—*C. A. Jørgensen.*

FOREST BOTANY AND FORESTRY

W. N. SPARHAWK, *Editor*

(See also in this issue Entries 4501, 4515, 4517, 4518, 4521, 4652, 4676, 4678, 4705, 4707, 4712, 4723, 4735, 4748, 4768, 4891, 4911, 4962, 4998, 5003, 5035, 5293, 5294, 5303, 5304, 5305, 5315, 5353, 5374, 5430, 5512, 5753)

4781. ANONYMOUS. Chinese Chestnut trees for America. *China Jour. Sci. and Arts* 37: 412. 1925.

4782. ANONYMOUS. *Denkschrift über die Laubstreunutzung in den badischen Gemeindewaldungen.* [Memorandum on the removal of litter in the communal forests of Baden.] *Forstwiss. Centralbl.* 47: 692-703, 765-773. 1925.—This paper deals with the legal and economic aspects of the removal of forest litter for farm use. The litter is considered part of the forest capital, as it is essential for maintaining the physical, chemical, and micro-biological conditions of the soil that are favorable to tree growth. It has been demonstrated that litter removal over a long period results in serious deterioration of the site and of the forest; in only a few years growth is reduced 30-50%. Natural reproduction, which is best and also cheapest, fails on soils which have become packed and sterile as a result of litter removal, while stands on such sites are more susceptible to insect attack. Baden, Hesse, and Württemberg all require that the annual timber cut be reduced in corporation and communal forests from which litter is raked. Forest litter is much inferior to peat, both for bedding and for fertilizer.—*W. N. Sparhawk.*

4783. ANONYMOUS. The Imperial Forestry Institute, Oxford. *Kew Bull.* 1924: 366-368. 1924.—This is a progress report.—*T. J. Fitzpatrick.*

4784. ANONYMOUS. [Rev. of: SCHWEIZERISCHEN FORSTVEREIN. *Die forstlichen Verhältnisse der Schweiz.* (Forest situation in Switzerland.) 2nd ed. *Illus.* Beer & Cie: Zürich, 1925.] *Forstwiss. Centralbl.* 47: 774-775. 1925.

4785. ARCHER, E. *Skogbruket og skogsaken i Skotland.* [Forestry and forest conditions in Scotland.] *Tidsskr. Skogbruk* 30: 2-63. 21 fig. 1922.—In Scotland 4.5% of the land is in forest, with an average annual increment of 1.05 cu. m. per ha. State holdings are very small. Most of the present standing forest was planted. Larch, Douglas fir, and Sitka spruce have been commonly used. Yield estimates of various species are given, with Douglas fir topping the list.—*W. H. Meyer.*

4786. BAEKKEN, A. O. *En kuberingsformel for vedreis.* [A volume formula for piled firewood.] *Tidsskr. Skogbruk* 33: 536-537. 1925.

4787. BEAN, W. J. A pinetum near Canterbury. *Kew Bull.* 1924: 301-302. 1924.—This is a general description of a plantation owned by Neville Cooper.—*T. J. Fitzpatrick.*

4788. BEESON, C. F. C. *Deodar defoliator.* *Indian Forest.* 51: 565-572. Pl. 31. 1925.—An undescribed species of *Ectopis*, has done serious damage over about 12,000 acres of *Cedrus deodara* forests, and appears to be spreading. The spring drouths of 1921-1923 seem to have favored the spread of the insect.—*E. N. Munns.*

4789. BELGRAVE, W. N. C. Some observations on the tapping of Hevea. *Malayan Agric. Jour.* 13: 257-270. 1925.—The results of various tapping experiments are discussed with relation to the constancy of yield, yield and girth, yield and growth, and yield from a system of double "V" tapping.—*R. E. Holttum.*

4790. BOHMER, J. G. *Bledningskog.* [Selection forest.] (French resumé.) *Tidsskr. Skogbruk* 30: 117-163, 195-266. 1922.—Tichy's tables of selection forest are discussed. Tables for Norwegian conditions are based on measurements of 43 plots. There are tables of diameter growth, crown areas for the total stand and for the single tree, growth percents, and bark thickness, through all diameter classes on 4 sites. Stand tables for various cutting limits are given; tables are also presented of heights and form point heights, intervals between cuts, volumes per tree and per ha., and basal areas.—*W. H. Meyer.*

4791. BORTHWICK, A. W. The cultivation of Canadian trees in other countries. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 454. 1925.

4792. BOYCE, J. S. The deterioration of felled western yellow pine on insect control projects. U. S. Dept. Agric. Dept. Bull. 1140. 1-7. 1 fig. (Also Timberman 24⁷: 157, 159-160.) 1923.—*Pinus ponderosa* which was felled and barked to control bark beetle epidemics (caused by *Dendroctonus* spp.) in the Klamath Lake region of southern Oregon lost 13-18% by deterioration during the 1st year, nearly all of it due to checking during drying. The sapwood was badly stained, mostly by *Ceratostomella* sp. By the 2nd year losses were 63-76%, and deterioration increased steadily, until by the 7th year little merchantable volume was left. After the 1st year most of the loss was caused by *Polyporus anceps*, *Lenzites saepiaria* and *Fomes pinicola*. From an economic standpoint, felled trees should be utilized before the 2nd season of exposure.—*Author*.

4793. CAJANDER, A. K. (AND OTHERS). Vorträge über die Waldwirtschaft und Forstwissenschaft in Finnland. [Forestry in Finland.] 132 p. 8 fig. Valtioneuvoston Kirjapaino: Helsinki, 1925.—CAJANDER is the author of papers on: (1) the Forest Service (2 papers); (2) the distribution of productive soil in Finland; (3) the cultivation of exotic trees; (4) silvicultural operations in State forests; (5) drainage of swamps in State forests; and (6) forest research in Finland. T. W. PAAVONEN contributes a paper on the Tapio Forest Society. O. HEIKINHEIMO gives the history of the Forest Exp. Sta. and outlines its work, and L. ILVESSALO describes forestry education in Finland. Results of the recently completed forest survey of the country are presented by Y. ILVESSALO, and the ownership of Finnish forests is discussed by E. A. SAARI. Other papers include 2 by O. J. LAKARI on the preservation of natural areas and the management of the State forests; E. J. KOSKENMAA on improvement of drivable streams; and M. PAKKALA on colonization in the State forests.—*W. N. Sparhawk*.

4794. CAMERON, D. ROY. Forest fire protection in Canada. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 450-451. 1925.

4795. COPLESTON, W. E. The Bombay forests. 57 p. 28 fig. Gov't. Central Press: Bombay, 1925.—This booklet outlines the aims and purposes of the Forest Department, discusses the forest situation, and describes briefly the silvicultural treatment of teak, babul, and other forests. The forests have suffered severely from destructive cutting, excessive grazing, and burning. Because of the necessity for devoting its efforts largely to protection and exploitation, the Department has not been able to accomplish much in silviculture.—*W. N. Sparhawk*.

4796. CRAIG, R. D. Forest utilisation in Canada. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 454. 1925.

4797. CRAIG, R. D., AND F. STOREY. The problem of the world's timber supply. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 455. 1925.

4798. DROVS. Einige kritische Bemerkungen zur Dauerwaldfrage. [Critical remarks on the continuous forest problem.] Zeitschr. Forst- u. Jagdw. 56: 313-315. 1924.—Thirty years ago German foresters concluded that natural regeneration of pine was a failure and that clear-cutting with planting should be the standard practice. Today clear-cutting of pine on the North German plain is to be given up for the "continuous" forest system. It is doubtful whether the new system is a more intensive form of management than clear-cutting.—*J. Roeser*.

4799. DUNN, S. T. [Rev. of: PARKINSON, C. E. A forest flora of the Andaman islands. Parkinson: Simla, India, 1923.] Kew Bull. 1924: 366. 1924.—This is a field book for local foresters.—*T. J. Fitzpatrick*.

4800. DUNNING, DUNCAN. Some results of cutting in the Sierra forests of California. U. S. Dept. Agr. Dept. Bull. 1176. 1-26. Pl. 1-8, fig. 1-2. 1923.—This bulletin presents the results of 10 years' study of growth of the residual stand and the rate of restocking on typical cut-over areas in the mixed conifer type in the national forests of the Sierra Nevada. The data were obtained from sample plots aggregating 300 acres, with 13,000 trees over 4 inches in diameter. The residual stands of 10-20 M board feet per acre represent 30-60% of the original stands. The group selection and shelterwood methods of cutting were followed.

Net annual growth after cutting averaged 205 board feet per acre, or 1.37%. Annual losses averaged 0.39%. On Sites I and II, with careful selection of trees, reserved stands of 10 M board feet per acre or less may be expected to grow at a rate of 2-3% a year. On poorer sites cutting should be designed primarily to insure reproduction rather than to hasten the growth of reserved trees. Sound trees with symmetrical crowns equal in length to 60% of the total height, pointed tops, dense healthy foliage, and bark characteristic of immaturity responded most readily and grew best after thinning. *Abies concolor* grew most rapidly, followed in order by *Pinus lambertiana*, *Pseudotsuga taxifolia*, *Pinus ponderosa* and *Libocedrus decurrens*. *Pinus lambertiana* maintained a good rate of growth to higher diameters than the other species. Emphasis is placed on conserving advance reproduction. Regeneration periods of 5-10 years for sites I and II and 20 years or more for site III are indicated. The future composition of the stand is predetermined largely by the character of advance reproduction. In the absence of fire *Abies concolor* and *Libocedrus decurrens* tend to replace the pines. The group selection system is less favorable to growth and reproduction than modified shelterwood and seed tree cuttings. Little control of underbrush can be exercised through cutting because the original stands are already so understocked as to permit invasion by brush.—*Author*.

4801. DUPONT, G. Distillation du bois. [Wood distillation.] xv + 284 p. 52 fig. Gauthier Villars & Cie.; Masson & Cie.: Paris, 1924.—This book, written for engineers and chemists, treats of the chemistry of wood, the methods and apparatus used in distillation, and the products of wood distillation and their derivatives.—*W. N. Sparhawk*.

4802. EIDE, E. Skogforsøksvaesenets opgaven i Nord-Norge. [Problems for forest research in northern Norway.] Tidsskr. Skogbruk 33: 517-531. 1925.—The productive capacity of the forest is being studied by means of sample plots in stands of spruce and birch, pine and birch, and pure pine. The best systems of cutting, including reproduction cuttings and thinnings in even and uneven-aged stands of each type are also investigated. A thorough investigation of reproduction and seed characters is being carried on.—*W. H. Meyer*.

4803. ELORRIETA, JOSÉ. En defensa de las Sequoias. [In defense of the Sequoias.] España Forest. 11: 120-123. 2 pl. 1925.—The writer disagrees with Villar's statement (see Bot. Absts. 15, Entry 1625) that California redwood does not deserve consideration for forest planting in Spain. In the northern and northwestern portions of the Iberian peninsula, where the annual rainfall is around 1100 mm. and the temperature range is 4-30°C., individual specimens of *S. sempervirens* have done well. A 62-year-old tree was 38 m. tall and 95 cm. in diameter breast high.—*W. N. Sparhawk*.

4804. FINLAYSON, E. H. The facts and possibilities of silviculture in Canada. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 454. 1925.

4805. FRIIS, G. P. Lidt om Askens Vaekstforhold, saerlig i Blandingsskov. [Growth conditions of ash, especially in mixed stands.] Dansk Skovfor. Tidsskr. 10: 419-428. 1925.—Ash does well in mixture with beech, oak, larch, and fir. Underplanting of ash under standards of the other species has good results.—*W. H. Meyer*.

4806. FROTHINGHAM, E. H. The research program of the Appalachian Forest Experiment Station. Jour. Elisha Mitchell Sci. Soc. 39: 70-75. 1923.

4807. FUSCHELBERGER, HANS. Die Gefahr waldbaulicher Schlagworte. [The danger of shibboleths in forestry.] Wien. Allgem. Forst- u. Jagdzeitg. 43: 262-264. 1925.—The "continuous" forest system which is taking central Europe by storm cannot be accepted as sound under all conditions. The author presents evidence of the fallacy of the system in high mountain stands. These have assumed a broken form as a result of past utilization, with poor, limby trees in open stands and with the ground covered with heather and other weeds and only scanty reproduction. The best way of combating these conditions is by clear cutting of small scattered groups of trees, making openings which will be quickly occupied by reproduction. This is not practical in every case, as on south slopes with thin soils where it is sometimes impossible to get dense reproduction under any circumstances and where the scanty stands must be preserved at all costs to prevent deterioration of the sites.—*F. S. Baker*.

4808. GEHRHARDT. Ist die Trennung von Haupt- und Vornutzung noch zeitgemäss? [Is separation of principal and intermediate yield still timely?] Zeitschr. Forst- u. Jagdw. 56: 429-440. 1924.—The preponderance of opinion favors regulation on the basis of total yield, which is the practice in Württemberg, Saxony, and Baden.—*J. Roeser*.

4809. GRAVES, HENRY S. The conservation problem of the paper and pulp industry. Sci. Monthly 20: 225-235. 1925.

4810. GRIESSMANN, K. Die Kiefern Samen-Anerkennung und der Kiefern Samen-Handel. [Certification of and trade in pine tree seed.] Deutsch. Forstzeitg. 40: 1259-1261. 1925.—Even more than in agriculture, good seed of proper origin is of fundamental importance in forestry. Poor seed, or seed from the wrong localities, has already produced many stands of inferior trees in Germany. Public action to insure the quality of seed, especially pine, and to forbid gathering seed in certain localities, is urged.—*W. N. Sparhawk*.

4811. GUPPY, ESTELLA L. The story of the Sequoias. 31 p. 4 pl. Post Printing & Binding Co.: Pasadena, California, 1925.—This is a popular account of the 2 California Sequoias.—*W. N. Sparhawk*.

4812. HEIDE, F. Sejers Skoves Historie. [The history of Sejer Forest.] Dansk Skovfor. Tidsskr. 10: 428-453. 1925.—This is an account of forest planting on the once practically forestless island of Sejer.—*W. H. Meyer*.

4813. HØDAL. Skogsaken paa vestlandet gjennem 25 aar. [Forestry conditions in Vestland for 25 years.] Tidsskr. Skogsbruk 31: 484-524. 8 fig. 1923.

4814. HOFFMAN, F. Einfluss der Dauerwaldwirtschaft auf den Waldbesitz, die Holzindustrie und den Holzhandel. [The influence of "continuous" forest management on forest ownership and the timber industry.] Wien. Allgem. Forst- u. Jagdzeitg 43: 255-256. 1925.—The "continuous" forest (Dauerwald) costs less to establish than any system involving artificial reforestation. It requires less technical skill in determining felling budgets, etc., but involves higher costs in logging and harvesting the crop. In most places the work must be done during a few weeks in winter when skidding on the snow is practical, in order not to injure the young growth.—*F. S. Baker*.

4815. HOWARD, S. H. Volume and outturn tables for Sal (*Shorea robusta*). Indian Forest Rec. 12: 1-87. 1925.—Four complete sets of tables are given, based on total height, site classes, length of commercial bole and for deduction of bark thickness. Those based on length of commercial bole are not recommended for general use.—*E. N. Munns*.

4816. ILLICK, JOSEPH S. Common trees of Pennsylvania. 112 p. Illus. Times Tribune Co.: Altoona (Pennsylvania), 1925.—This pocket manual describes the common native and introduced trees of the State.—*W. N. Sparhawk*.

4817. JEFFERS, D. S., AND C. F. KORSTIAN. On the trail of the vanishing spruce. Sci. Monthly 20: 358-368. 11 fig. 1925.—Red spruce and Fraser fir were driven southward by the continental glacier. As the ice retreated these trees took refuge on the mountain summits of the Appalachians. The forests were cut over 1st for lumber and then for pulp. Owing to poor lumbering methods much of the land has been swept by fire and gullied by water. Burns reforest in cherry and yellow birch instead of spruce. Spruce and fir seem near extinction unless early steps are taken to conserve them.—*A. M. Taylor*.

4818. JELSTRUP, H. Innberetning om det Norske Skogvesen for kalender-året 1924. [Report of the Norwegian Forest Service.] 67 p. Oslo, 1925.—A detailed report of the Forest Service activities in 1924 is given. Such items are included as administration and personnel, expenses and income, surveys, maintenance of boundary lines, reports on management, damage, nursery activities and planting, details of timber sales, fish and game, education, etc. It is interesting to note that only 400 ha., chiefly non-timbered, was burned on the public forests.—*W. H. Meyer*.

4819. JELSTRUP, H. J. Statens skoganlaeg. [State afforestation in Norway.] Tidsskr. Skogbruk 31: 161-180. 5 fig. 1923.—A review of 50 years' State activity shows 4290 ha. planted. Of the trees planted, 55.6% were Scotch pine, 22.1% were *Pinus montana*, and 14.3% were spruce, with 8% of miscellaneous species. Spruce is less injured by insects and fungi than pine. *P. montana* is not hardy enough.—*W. H. Meyer*.

4820. KIENITZ, M. Weitere Entwicklung der Harznutzung an der gemeinen Kiefer *Pinus silvestris* L. [Further development of resin production from the common pine.] Zeitschr. Forst- u. Jagdw. 56: 399-429. Pl. 2. 1924.

4821. KIERULF, T. *Fra Furudal statskog paa Namdalseidet; litt om bundesvegetation og foryngelseforhold.* [Furudal State Forest; notes on ground vegetation and reproduction conditions.] Tidsskr. Skogbruk 30: 90-97. 1922.

4822. KONING, M. DE. *Die Forstwirtschaft in den Niederlanden und ihren Kolonien.* [Forestry in the Netherlands and her colonies.] Forstwiss. Centralbl. 47: 706-716, 745-756, 798-804. 4 fig. 1925.—Part I outlines the development of forestry in the Netherlands, most of which has taken place since the foundation of the Heath Culture Society in 1889. The activities of this Society, the local communities, and the State Forest Service (established 1898) are described. Since 1900, 30,000 ha. of waste land has been afforested. Over $\frac{1}{2}$ of the 248,000 ha. of forest consists of *Pinus silvestris*, which is grown mostly under a 40-60 year rotation for mine and small building timbers. Various other conifers occur as scattered individuals or small groups, and fair-sized plantations of *P. laricio* and *P. austriaca* have been made on the dunes. There are large areas of oak (*Q. pedunculata*) and other coppice, mostly managed under a 11-15 year rotation, as well as some stands of large oak, beech, and other broad-leaved trees. Basket willow is cultivated extensively. From the economic point of view, forestry will always be relatively unimportant in the Netherlands.—Part II deals with the East Indies, which have about 123,155,000 ha. of forest, practically all belonging to the State. The teak forests, mostly confined to Java (734,700 ha.), are the most valuable at the present time and have been managed by foresters for 60 years. Methods of handling the teak forests are described. The other forests are being explored and studied, with a view to management as soon as economic conditions demand it. So far they have been valuable chiefly for their by-products: Tan-barks, camphor (*Dryobalanops aromatica*, which is said to yield better camphor than the Japanese *Cinnamomum camphora*), rattans, benzoë resin (*Styrax benzoin*), damar resin (Dipterocarpaceae), copal (*Agathis alba*), dragon's blood (*Daemonorops draco*), jelutong (*Dyera* sp.), gutta percha, and rubber. The organization of the forest service is outlined. A forest experiment station was established at Buitenzorg, Java, in 1913.—Part III takes up Dutch Guiana (Surinam), which has 12,000,000 ha. of forest, nearly all in public ownership. The principal task before the forest service now is to conserve the forests, control their exploitation, inventory the resources, and carry on studies. Intensive management has no place until systematic exploitation is practicable. There is little market for the valuable cabinet woods, but a fair demand for timbers used in marine construction (*Eschweilera longipes*, *Parinarium* sp., and *Dicorynia paraensis*, all of which resist marine borers better than greenheart). Several other important species are listed. A committee of the Colonial Institute (Amsterdam) carries on investigations of the structure, properties, and botanical identification of Surinam woods, and has already covered 75 species.—W. N. Sparhawk.

4823. LARSEN, V. *Anlaeg og Opdragelse.* [Establishment and care.] Dansk Skovfor. Tidsskr. 10: 412-419. 2 fig. 1925.—Two beech stands in the Frederiksgave Forest district show the effect of removal of oak standards. A light overhead shade is conducive to good form development of the underplanted beech.—W. H. Meyer.

4824. LEFEVER, R. H. *The Eastern Tombs: a diary of a ten day trip.* China Jour. Sci. and Arts 3⁵: 273-275. 6 pl. 1925.—An evergreen forest was found at Ma Lan Yu. The imperial forest northeast of the Great Wall is being rapidly exploited and the area frequently burned over, resulting in complete destruction of this former important and extensive forest.—W. C. Lowdermilk.

4825. LEMMEL. *Was kann und muss zur Forderung der forstlichen Produktion geschehen?* [What can and must be done to increase forest production?] Deutsch. Forstzeitg. 40: 1230-1233, 1254-1257. 1925.—Technically, it may be possible to increase the yield of German forests by 50-100%, but it is not economically possible. Afforestation of waste land is costly and can add less than 5% to present output; more can be accomplished by better stocking of existing forests and by better silviculture. Private owners are unlikely to make the extra investment without some certainty of the result. Much can be accomplished by better utilization; cutting lower stumps will alone save more wood than afforestation of all available waste land will yield in 50 years. Better grading and cutting up of the timber will increase the yield of commercial timber (Nutzholz). Large tracts of private forest yield only

30-40% of this class, against an average of 49% for the whole country and 60% for the State forests. Better silviculture, especially thinnings made at the proper times, will give a larger proportion of better grade timber. More intensive utilization of land and capital (lower interest rate and larger growing stock) is necessary for maximum quantity production, and is especially the duty of the State forests. Reasons for the present low productivity are: (1) Lack of technical ability and knowledge; (2) lack of interest; (3) financial weakness; (4) the character of ownership, especially of the smaller private forests which are more or less side lines connected with farms, and are usually neglected; (5) servitudes, especially rights to litter and to firewood; and (6) heavy taxation. Remedies must come largely through the private owners, assisted by the State which should provide adequate protection against various losses, financial backing, and cheap or free seed and planting stock, as well as technical leadership and advice. Minimum requirements as to the handling of forests should be imposed by law, leaving responsibility and initiative so far as possible with local autonomous bodies.—*W. N. Sparhawk.*

4826. LIE, H. *Fjeldskog*. [Mountain forest.] *Tidsskr. Skogbruk* 31: 79-86. 1923.—The question of the lowering of the upper limits of the forest in Norway is brought up. The areas of the mountain forests, totalling about 36,000 sq. km., are tabulated for the various districts.—*W. H. Meyer.*

4827. LOWDERMILK, W. C. Some practical possibilities in forestry for China. *Jour. Assoc. Chinese and American Engineers* 64: 30-36. *Pl. 1-16*. 1925.—China is handicapped by inadequate timber supplies. Remnants of a former extensive forest were found in Shansi. The forests are still being destroyed to make room for oat and potato crops. After a few years the rain washes the slopes bare of the rich forest soils, develops torrents of great erosive power and renders the mountains productive of neither crops nor forests. This process has been at work for many centuries over ever-widening extent until the remotest sections are under cultivation or show evidences of abandoned fields. The temple forests serve as excellent indicators of the character and extent of the former forest cover. In the Yangtze valley forest, growth may be secured by proper protection from the fuel gatherer. In North China the checking of erosion is the problem of first importance. Tree planting with simple engineering works in the bottoms of gullies is perhaps the best means of checking erosion.—*Author.*

4828. LOWDERMILK, W. C. The preparation and tending of a forest nursery. *Jour. Assoc. Chinese and American Engineers* 62: 33-39. 1925.—Simple rules for growing trees in nurseries are followed by notes on some Chinese species suitable for forest plantations.—*Author.*

4829. MATTOON, WILBUR R., AND AUSTIN F. HAWES. Common forest trees of Connecticut. A pocket manual describing their most important characteristics. 44 p. *Illus.* Connecticut State Park and Forest Commission: Hartford, 1925.

4830. MIDTTUN, J. *Fra Telemark*. [From Telemark.] *Tidsskr. Skogbruk* 31: 86-96. 5 fig. 1923.—This is a description of forest conditions in Telemark, Norway.—*W. H. Meyer.*

4831. MØRK-HANSEN, K. *Er Rødelens Tid forbi?* [Is the time of red alder past?] *Dansk Skovfor. Tidsskr.* 10: 409-412. 1925.—The development of planted stands of red alder is very poor, while self reproduced stands grow well, indicating that seed of the wrong origin is used for planting.—*W. H. Meyer.*

4832. NAKASHIMA, H. New methods of determining height growth in tree analysis (2). (Japanese.) *Res. Bull. Coll. Exp. Forests Hokkaido Imp. Univ.* 2: 1923.—Height growth for each decade in tree analysis is expressed by the formula: $y = ax + bx^2 + cz$, in which y = length of tip, x = diameter of tip, z = double width of annual zone and a, b, c , = constants.—*Author.*

4833. NORDHAGEN, R. *Nogen bemerkninger om bjerkens flerstemmethet i vore fjeldstrakter*. [Some remarks on the many stemmed habit of birch in our mountain regions.] *Tidsskr. Skogbruk* 31: 103-109. 3 fig. 1923.—*Betula odorata* seldom sends forth root shoots. In the mountain regions of northern Norway it often grows in dense clumps. These were found to be not root shoots but sprouts arising from the base of the stump.—*W. H. Meyer.*

4834. NYBO, K. *Skogplantningen i Sogn og Fjordane fylke*. [Forest plantations in Sogn and Fjordane.] *Tidsskr. Skogbruk* 33: 513-517. 1925.—The reason for the poor appearance

or failure of the Scotch pine plantations lies in the fact that the seed was imported from southern countries.—*W. H. Meyer.*

4835. ORTIZ, HECTOR L. *El cultivo del Dividivi en Venezuela.* [Dividivi (*Caesalpinia coriaria*) cultivation in Venezuela.] Bol. Cámara de Com. Caracas 14¹³⁴: 2705-2706. 1925.—The crop should be increased through cultivation, and the product should be better prepared. The exportation of dividivi has been decreasing since the war, owing to depreciation, lack of labor, and other causes. The Venezuelan product is of superior quality, yielding up to 38% of tannin.—*H. Pittier.*

4836. RÖHRL. Bericht über die Münchener Naturschutzausstellung. [The nature protection exhibit at Munich.] Forstwiss. Centralbl. 47: 892-895. 1925.—This is a brief statement on the movement to preserve the native fauna and flora of central Europe, in which foresters must play an important rôle.—*W. N. Sparhawk.*

4837. RUBNER. [Rev. of: FEUCHT, OTTO. *Die Bodenpflanzen unserer Wälder.* (The vegetation of the forest floor.) 128 p. *Illus.* Strecker & Schröter: Stuttgart, 1925.] Forstwiss. Centralbl. 47: 902-903. 1925.

4838. RUBNER. [Rev. of: WIEDEMANN, EILHARD (AND OTHERS). *Die praktischen Erfolge des Kieferndauerwaldes.* (The practical results of the pine "Dauerwald.") *Illus.* Friederich Vieweg & Sohn: Braunschweig, 1925.] Forstwiss. Centralbl. 47: 903-905. 1925.—The reviewer agrees with the conclusion that no permanent increase in yields can be expected from the "Dauerwald." He points out that Wiedemann is in error in believing that pine does not reproduce naturally under shelter, and also shows that pine occurs naturally in mixture with beech and other broad-leaved trees, notably in the Carpathians and Polesia.—*W. N. Sparhawk.*

4839. S. [Rev. of: (BAVARIA, DEPARTMENT OF FINANCE, FORESTRY SECTION.) *Forststatistischer Jahresbericht der Bayerischen Staatsforstverwaltung für 1919-1921.* Heft 2. (Statistical report of the Bavarian Forest Service for 1921-1922. Part 2.) 1925.] Forstwiss. Centralbl. 47: 905-907. 1925.—The grouping of the statistics by natural regions rather than by political subdivisions is noted as an improvement over previous reports.—*W. N. Sparhawk.*

4840. SAXLUND, M. *Vor vernskog.* [Our protection forest.] Tidsskr. Skogbruk 31: 141-151. 6 fig. 1923.—In respect to its area Norway has the largest amount of protection forest of any European country. Its management involves several problems which are in need of investigation.—*W. H. Meyer.*

4841. SCHILLING. *Bayerische Forststatistik 1913-1918.* [Bavarian forest statistics, 1913-1918.] Zeitschr. Forst- u. Jagdw. 56: 378-379. 1924.—The 1st report of the Bavarian State forest department since the war furnishes information on the amount of wood cut during the war. The cut fell off approximately 5%, but heavier post-war utilization has probably compensated. During the war considerably less than the normal amount of cultural work was done.—*J. Roesser.*

4842. SCHMIDT. *Vegetationsversuche zum Ertragsfaktor Licht.* [Vegetational experiments with light as a factor in production.] Zeitschr. Forst- u. Jagdw. 56: 461-472. Fig. 1-3. 1924.—Experiments conducted in 1922 with 1-7-year-old beech, ash, alder, pine, Norway spruce, and silver fir indicated that the light factor value of the Mitscherlich formula is constant; that the position of a species in the minimum light scale is dependable as the expression of specific tolerance; and that tree species are adapted to their particular light climates.—*J. Roesser.*

4843. SCHUBERT, J. *Über das Wachstum von Kiefernbeständen.* [Growth of pine stands.] Zeitschr. Forst- u. Jagdw. 56: 473-477. 1924.—The average heights, diameters, and volumes of even-aged stands are considered.—*J. Roesser.*

4844. SCHUPFER. [Rev. of: (KONTOS, PETER E.) *Κύριος, Πέρος Η. Diacheirisis Hellenikon Dason.* (Regulation of Greek forests.) 842 p. Hellenogallikon Typographeion: Athens, 1924.] Forstwiss. Centralbl. 47: 900-902. 1925.

4845. SCHUPPIUS. *Forstliches aus Togo.* [Forest notes from Togoland.] Zeitschr. Forst- u. Jagdw. 56: 502-509. 1924.—Forests occupy barely 2% of the area. Commercial stands occur in a few scattered blocks and in strips along water courses. The chief forest problems are the preservation of existing forests, reforestation on suitable sites, and the

utilization of existing stands to meet local demands and to provide eventually for export.

—J. Roesser.

4846. SEEGER. Zur Kritik des badischen Femelschlages. [Criticism of the selective cutting system of Baden.] Forstwiss. Centralbl. 47: 877–891. 1925.—The standard silvicultural system that prevailed in Baden during most of the 19th century was the result of economic rather than silvicultural considerations. As there was no market for small timber, the regeneration fellings took the larger trees and left the smaller to grow during 30–40 years while reproduction was establishing itself. Since 1870 industrial changes have given rise to a demand for small timber (mine timbers and pulpwood) and the former method is no longer justified on economic grounds. Silviculturally it is objectionable because of the damage to young growth in removing the old timber and because of the difficulty of regulating the composition of the new stand. Siefert's method of withdrawal (Erziehungs) fellings is to be preferred. He proposes fairly heavy (C-grade) thinning at 60–70 years, repeated at 10-year intervals thereafter. The defective and less vigorous stems and those of the subordinate crown classes are removed, leaving the best to grow until the final cut. Each thinning takes out approximately as much wood as has grown since the previous thinning, so that there is practically no increase in volume of the main stand during the last $\frac{1}{3}$ of the rotation.

—W. N. Sparhawk.

4847. SKINNEMOEN, K. A. To grunnlag for utlegning av taksasjonslinjer i skog. [Two bases for laying out survey strips in the forest.] Tidsskr. Skogbruk 31: 241–252. 3 fig. 1923.

4848. SKÖIEN, O. Bonitering av skogmark. [Determining forest site qualities.] Tidsskr. Skogbruk 31: 223–236. 3 fig. 1923.—A new method of judging the quality of site is based on the relation of the total height of a tree to the width of the growth rings for the last 10 years at breast height. Curves and tables are given for field use.—W. H. Meyer.

4849. SLOSSON, EDWIN E. Spun logs. Sci. Monthly 21: 629–633. 1925.—In the 4 processes for making rayon from spruce or cotton linters the cellulose is dissolved by either an acid or an alkali. The strength of fiber is $\frac{1}{2}$ – $\frac{2}{3}$ that of natural silk when dry but less when wet. Rayon made by the acetic acid process is more transparent to ultra-violet rays than is wool or silk. Similar materials are now used in making horsehair, Spanish lace, Nottingham lace, Smyrna rugs, and furs, and in cellophane.—A. M. Taylor.

4850. SØRHHUS, K., ERLING EIDE, M. ROLSTED, LARS AUKRUST, OG M. ØDELIEN. Beitebruk og Skogbruk. [Grazing and Forestry.] Bilag Tidsskr. Skogbruk 33^o: 1–67. 1925.—A special committee reports upon the establishing of better relations between grazing and forestry, with particular relation to western and northern Norway. Goats and sheep, especially the former, do the most damage in grazing. Amounts of necessary acreage for grazing on various sites are given. Rational cultivation of lands will decrease the acreage needed. Marsh lands are better fitted for grazing than for forest production. Good forests should be cleaned only where absolutely necessary. More intensive management allows larger herds. Sheep are the best animals for the mountain lands. With the rise in price of goat milk products, goats will become more important. Dairy farming demands fuel wood or other sources of energy. Existing and desirable legislation are discussed.—W. H. Meyer.

4851. SPRING, F. G. Manuring of *Hevea braziliensis*. Malayan Agric. Jour. 13: 145–148. 1925.—Present knowledge of this subject in Ceylon and the Malayan region is summarized. More information is needed regarding the influence of manuring on latex yield.—R. E. Holttum.

4852. SPRING, F. G. Tapping systems and other factors influencing yield of *Hevea braziliensis*. Malayan Agric. Jour. 13: 287–292. 1925.—Reports from various estates are summarized, dealing with yield during wintering, hour of tapping, and yield with various tapping systems.—R. E. Holttum.

4853. STOCKER, C. L. Forests of British Honduras. (In: METZGEN, MONRAD S., AND HENRY E. C. CAIN (compilers). Handbook of British Honduras. xlii + 461 p. Illus. Map.) P. 159–175. West India Committee: London, 1925.—About 100 kinds of wood are listed and briefly described.—W. N. Sparhawk.

4854. SWAINE, J. M., AND J. M. MUNRO. Forest protection from insects. Rept. British Assoc. Adv. Sci. 1924: 450. 1925.

4855. SYRACH LARSEN, C. Den forstbotaniske Have i Charlottenlund. Et Bidrag til dens

Historie. [The garden of forest botany at Charlottenlund. A contribution to its history.] (English summary.) K. Vet. Landbohsk. Aarbog [København] 1925: 17-62. 17 fig. 2 maps. 1925.—The 1st Danish State Arboretum was founded in 1799 in Charlottenlund wood, 7 km. north of Copenhagen, but the present, more extended arboretum dates back only to 1838. The dimensions of several trees are given.—*Ernst Gram*.

4856. TOUMEY, J. W. Recent progress and trends in forestry in the United States. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 449-450. 1925.

4857. VERMOESEN, C. Manuel des essences forestières du Congo Belge. [Manual of forest trees of Belgian Congo.] xii + 289 p. 43 fig. 27 col. pl. Imprimerie Industrielle et Financière; Bruxelles, 1923.—For each of a large number of species are given botanical and vernacular names, geographical distribution, botanical description, and notes on the properties and uses of the wood. The following new species are described, Vermoesen being authority: *Cynometra sankuruensis*, *Dialium yambataense*, *Entandrophragma pseudocylindricum*, *E. Leplaci*, *E. roburoides* (last 2 illustrated but not described), *Irvingia Wombolu*, *Klainedoxa elliptica*, *K. lanceifolia*, *Pterygopodium balsamiferum*, and *Sorindeia maxima*.—*W. N. Sparhawk*.

4858. VILLAR, JACOBO ARIAS. Sobre elección de especies. Los álamos. [The choice of species. Poplars.] España Forest. 11: 155-159. 1925.—Planting of poplars for timber production in Spain is held to be inadvisable, for better species will thrive in any place where poplars will succeed.—*W. N. Sparhawk*.

4859. WARR, J. H., AND S. KAMESAM. Notes on the antiseptic treatment of Assam timbers for railway sleepers. Indian Forest Rec. 11¹⁰: 283-388. 1925.—Railway ties of *Cynometra polyandra*, *Dipterocarpus pilosus*, *Shorea assamica*, *Dillenia indica*, *Bischofia javanica*, *Terminalia myriocarpa*, and *Lagerstroemia Flos-Reginae* were treated with coal tar creosote and petroleum using different pressure and other treatments. The results are noted.—*E. N. Munns*.

4860. WEGGE, P. Gamle Ege i Vemmetofte og Rosendal Skove. [Old oaks in Vemmetofte and Rosendal Forests.] Dansk Skovfor. Tidsskr. 10: 383-409. 18 fig. 1925.

4861. WEIBEL, EMANUEL. Die Waldbaukunst in Bährenthoren. [Silviculture in Bährenthoren.] Wien. Allgem. Forst- u. Jagdzeitg. 43: 273-274. 1925.—This is a description of the development of von Kalitsch's "continuous" forest ("Dauerwald") system.—*F. S. Baker*.

4862. WELCH, M. B. Notes on strength of timbers with list of transverse tests on specimens in Technological Museum. Tech. Mus. Sydney, Bull. 6. 1923.

4863. WENSE, H. VON DER. Zur Frage der Autochthonie des Nadelholzes in der Lüneburger Heide. [Autochthony in the coniferous forest on the Lüneburg heath.] Zeitschr. Forst- u. Jagdw. 56: 568-569. 1924.—Historical records dating back to 1203 indicate that in the southern half of the government district, Lüneburg, that is, south of the Soltau-Uelzen Railroad right-of-way, the coniferous forest is autochthonous. Scotch pine and Norway spruce are involved indiscriminately. It is doubtful if conifers are indigenous in the northern part of Lüneburg where pure deciduous stands are the rule.—*J. Roesser*.

4864. WIEDEMANN, UND GÄRTNER. Die Harter'schen Pflugdammkulturen im Sächs. Staatsforstrevier Dresden. [Harter's ploughed dike plantations in the Saxon State forest of Dresden.] Zeitschr. Forst- u. Jagdw. 56: 337-399. 1924.—Without appreciable increase in cost, Harter has succeeded in raising pine on poor sandy soils by means of ploughed dike cultivation and careful tending of the young stands. His method has also been successful in the afforestation of barren land. The costs, rates of growth, and effect upon the soil with this and with other systems are compared. With this system it is possible to raise even-aged mixed stands of pine and beech without having to protect the beech against game.—*J. Roesser*.

4865. WILDER, G. D. Wild life today in the Eastern Tombs forest. China Jour. Sci. and Arts 3⁵: 276-282. 4 pl. 1925.—The rapid destruction of the Eastern Tombs forest since 1900 is described.—*Albert N. Steward*.

4866. WIRT, GEORGE H., AND CHARLES R. MEEK. Pennsylvania forest fire warden manual. Pennsylvania Dept. Forests and Waters Bull. 36 (Revised). 1-45. 9 fig. 1925.

4867. WRIGHT, W. G. Statistical methods in forest investigative work. Dept. Interior Canada Forest. Branch Bull. 77. 1-36. Fig. 1-3. 1925.—This consists of a brief discussion of the theory of statistical methods, and their application in forest research.—*W. N. Sparhawk*.

4868. ZAVITZ, E. J. Forests and forestry in Ontario. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 451. 1925.

4869. [ZAVITZ, E. J.] Report of Forestry Branch, 1920. Rept. Minister Lands and Forests, Ontario 1920: 207-235. 9 fig. 1921.—A definite plan of forest reconnaissance was begun and 1,720,000 acres were mapped at an average cost of $\frac{1}{4}$ cent an acre. Stock was distributed from the provincial nursery in Norfolk county to individuals, for planting waste or vacant land.—A. W. McCallum.

4870. ZAVITZ, E. J. Report of Forestry Branch, 1921. Rept. Minister Lands and Forests, Ontario 1921: 207-266. 5 fig. 1922.—Forest reconnaissance covered 7,682,518 acres at a cost of $\frac{1}{4}$ cent an acre. The results of the survey are presented in tabular form. Approximately 10,000 sq. miles in northern Ontario was covered by aerial survey. The provincial nursery was enlarged to provide for new reforestation projects. Extensive planting of Carolina poplar and green willow cuttings was done by the government upon drifting sand in Prince Edward County.—A. W. McCallum.

4871. ZAVITZ, E. J. Report of Forestry Branch, 1922. Rept. Minister Lands and Forests, Ontario 1922: 209-263. Fig. 1-9. 1923.—Flying boats were used for the 1st time for detecting and fighting fires and were found to be of great value. Two districts (13,500 sq. miles and 4,000 sq. miles) were surveyed by airplanes in conjunction with ground parties. In the larger tract only 17.2% of the total area was found to contain trees of pulpwood size. New nurseries were established at Orono and Midhurst. Planting was continued in Prince Edward County and was begun in Simcoe County upon a 1000 acre tract provided by the county.—A. W. McCallum.

4872. [ZAVITZ, E. J.] Report of Forestry Branch, 1923. Rept. Minister Lands and Forests, Ontario 1923: 161-207. 1924.—Airplanes were successfully used for fire detection. Extensive forest surveys were carried out in the Mississagi and Nipigon Forest Reserves. Airplanes were used in both surveys.—Fall seeding is favored at the provincial nursery. Planting of willow and Carolina poplar on the Sand Banks in Prince Edward County was continued.—A. W. McCallum.

4873. [ZAVITZ, E. J.] Report of the Forestry Branch, 1924. Rept. Minister Lands and Forests, Ontario 1924: 83-121. 1925.—The government has instituted its own air service in the Forestry Branch. This service was utilized for fire detection and fighting, sketching, photography, and transportation.—A preliminary report dealing with the investigation of young white pine stands is presented.—A small nursery was established at New Liskeard in northern Ontario to supply farmers with stock for planting windbreaks. Planting was continued on an increased scale by certain counties, towns, and private individuals.—A. W. McCallum.

GENETICS

ORLAND E. WHITE, *Editor*

(See also in this issue Entries 4498, 4693, 4723, 5062, 5074, 5102, 5108, 5251, 5256, 5326, 5583, 5719)

4874. ANONYMOUS. A white blueberry. Amer. Bot. 31: 155. 1925.—The article notes the discovery near Fitchburg, Massachusetts, of a white-fruited form of highbush blueberry (*Vaccinium corymbosum*). The plant resembles the type in all characters except the fruit color.—Mary Ellen Peck.

4875. ANONYMOUS. Dansk Planteforædling. [Danish plant breeding.] Vort Landbrug 44: 531-534, 557-559, 614-616, 641-644. 14 fig. Copenhagen, 1925.—The Danish breeding work is scattered among many private firms and agricultural associations, for the most part without State support. Nevertheless very good strains of forage crops and small grains have been produced. I. Breeding work was initiated by the Danish Agricultural Associations Seed Provision and the Cooperative Union in 1899 and is now carried out at Øtoftegaard and at another farm near Roskilde. Several strains of turnips and beets have attained 1st class in the State tests, thus acquiring the right to "Roman Index," of which "VI" at present

indicates the winners of the last competition. In the last years the rutabaga, Wilhelmsburger, has been notable for its resistance towards club-root. Prominent strains of grasses and legumes have been bred and work with sugar beets has been undertaken.—II. Among the features of the Danish Seed Growing Co., Ltd. and Field Seed Office (Trifolium), the comparison of seed of different geographic origin, introduction of Squarehead wheat on the continent, of Prentice barley and Wilhelmina wheat, and of several important strains of beets and turnips are noted. Of new strains, Yellow Tankard Amagergaard, Greystone Amagergaard, and Trifolium wheat (a Wilhelmina descendant) are best known.—III. The Breeding centers Pajbjerg and Hunsballe are known for their rutabagas, carrots, turnips, and fodder beets which repeatedly attained 1st class in the State tests.—IV. From Hinderupgaard belonging to the seed firm, Dæhnfeldt, several root crops have reached the highest class, and several vegetables have been in the 1st class in the contests lately initiated by the State experiment stations. In his breeding work with sugar beets, ERHARD-FREDERIKSEN, using diallel crossing, has gained promising results. Aside from the larger firms, individual breeders or small organizations of a few neighboring breeders have gained remarkable results with single crops.—V. The breeding work now carried on at Abed was initiated at the agricultural school, Næsgaard, and one of the 1st creations was the Yellow Næsgaard oat. Later on July-, Rex-, and Binder-barley were added, together with Silver- and Nova-oats and Dania wheat.—*Ernst Gram.*

4876. ANONYMOUS. New approved immune varieties of potatoes. Jour. Min. Agric. Great Britain 31: 1170-1172. 1925.—This list includes 4 2nd-early varieties, and 13 late or main-crop varieties. Each variety is described as to color of flower and sprout, shape of tuber, character of eyes and color of skin and flesh. Under haulm or stem, such characters as size of plant, upright or spreading habit, color, size and shape of leaves, coloration of stem at base, whether wings are crinkled or straight, etc., are indicated.—*W. Stuart.*

4877. ANONYMOUS. [Rev. of: STOCKS, PERCY, AND AMY BARRINGTON. Hereditary disorders of bone development. Pt. 1. Diaphysial aclasis (multiple exostoses), multiple enchondromata, cleido-cranial dysostosis. Eugenics Laboratory Memoirs 22, Francis Galton Laboratory for National Eugenics. University of London, Vol. 3. vi + 182 p. 16 pl.] Nature 116: 274. 1925.—Diaphysical aclasis affects chiefly the growing ends of the long bones; 976 cases of this disorder were found in medical literature, 183 families giving rise to 765 cases. Evidence of heredity was found in 69.6% of the cases tabulated. In the condition known as cleido-cranial dysostosis, there is a partial failure in the formation of the clavicle. Records of 144 cases of this disorder show the condition to be familial in 96 instances.—*P. C. Mangelsdorf.*

4878. AGAR, W. E. The male meiotic phase in two genera of marsupials (*Macropus* and *Petauroides*). Quart. Jour. Micros. Sci. [London] n. ser. 67: 183-202. 3 pl. 1923.—*Macropus ualabatus* has 12 chromosomes, $10 + xy$ in the ♂ and $10 + xx$ in the ♀. The sex chromosome was never found detached from an autosome in the ♀, and only rarely in the ♂, spermatogonial cells. The exceedingly minute y chromosome is always free except at diakinesis when it becomes attached to the x chromosome.—In *Petauroides volans* the author believes the chromosome number is 22; the ♂ being $20 + xy$. No ♀ counts were obtainable. The sex chromosomes can not be distinguished with certainty from the autosomes. Chromomeres are very prominent in the zygotene and diplotene stages of the meiotic phases. In both species no secondary reduction occurred prior to the 2nd meiotic division.—*A. E. Longley.*

4879. ÅKERMÄN, Å. Iakttagelser rörande olika havresorters motståndskraft mot gråfläcksjuka. [Observations on the power of resistance of different varieties of oats to gray-spot disease.] Nordisk Jordbruksforskning 1923²: 40-61. 1923.—Gray-spot disease, also known as potash hunger, or light-spot, attacks oats, wheat, barley, fodder and sugar beets and potatoes but is most severe and most characteristic on oats, where it may cause almost total loss of the crop. The disease is not of a parasitic nature but is thought to be due to abnormal conditions of the soil. It is aggravated by lime and other alkaline fertilizers and checked by acid fertilizers. Manganese compounds are especially advantageous in combating gray-spot. The development of resistant varieties is probably the most practical

method of control. This paper gives the results of extensive experiments carried on by the writer at Svalof from 1917 to 1922. As many as 62 varieties of oats and crosses were tested in gray-spot infested soil. His observations on the susceptibility of different varieties of oats to gray spot confirm results obtained by Nilsson-Ehle and Rhodin that heritable differences in resistance to the disease occur in different varieties. He also found that the disease was most severe in dry seasons. He concludes that resistance is due to several factors and is cumulative.—*Charlotte Elliott.*

4880. ALLEN, C. E. **The direct results of Mendelian segregation.** *Science* 62: 524. 1925. —The article describes study of the distribution of 2 pairs of alternative characters (female-ness versus maleness, polyclady versus non-pyclady) among the plants developed from the respective spores of individual tetrads of *Sphaerocarpos Donnellii*. Without exception to date, such a tetrad (if all spores germinate) gives rise to 2♀ and 2♂ plants; and, in a cross involving these characters, the 2 polycladous and 2 non-pycladous plants. Of 56 tetrads giving decisive results, 32 each produced 2 non-pycladous females, 2 polycladous males; 16 each produced 2 polycladous females, 2 non-pycladous males; and 8 each produced 1 non-pycladous ♀, 1 polycladous ♀, 1 non-pycladous ♂, 1 polycladous ♂. Of these 3 classes, the 1st presents the combinations of characters found in the gametophytic parents of the cross; and the preponderance of this class suggests the possibility of a linkage of some nature between the characters concerned. The 3rd class (with 4 qualitatively different spores in a tetrad) is much smaller than either of the classes with 2 types of spores in a tetrad.—*Author.*

4881. ANKEL, W. E. **Der Spermatozoendimorphismus bei Bythinia tentaculata.** (Dimorphic spermatozoa in *Bythinia tentaculata*.) *Zeitschr. indukt. Abstamm.- u. Vererb.* 33: 269–272. 1924.—(See Bot. Abstracts 14, Entry 5256.)

4882. BAUR, ERWIN. **Untersuchungen über das wesen die Entstehung und die Vererbung von Rassenunterschieden bei Antirrhinum majus.** [Investigations concerning the nature, origin and inheritance of varietal differences in *Antirrhinum majus*.] *Bibliotheca Genetica* 4: 1–170. 5 pl., 49 fig. Gebrüder Borntraeger: Leipzig, 1924. The character differences of an extensive collection of the cultivated and wild races of *A. majus*, and wild species of the section *Antirrhinastrum* studied exhaustively were color and shape of flower and leaf. The color differences of flower were found in most cases to be due to the interaction of a number of mendelizing factor pairs involving inhibiting or intensifying factors in certain cases, with occasional disturbances in ratios as a result of various linkages, lethals, etc. Simple unit factor differences were found in a number of character differences. A series of multiple factors for red color of flower was found in 1 race. One non-mendelizing race difference was found, of which the mode of inheritance was purely maternal. The estimated number of hereditary factors in the cultivated races of *A. majus* was 300. If the smaller factor differences were included the number might reach 1000. In variety crosses of wild species and in interspecific crosses including the garden races an extremely complicated segregation occurred in the F₂ showing that, at the basis of even small character differences as in different varieties of a wild species, there were a large number of small factor differences. The wild species were homozygous dominants of most of the homozygous recessives which conditioned the cultivated races. The series of multiple factors for red color sheds some light on the difference in structure of a dominant and recessive gene. The different shades of red color may be due to polymerization in the sense of organic chemistry. *A. majus* is an autogamous species and the individuals used for crossing or to continue a variety were self-fertilized. Mutations arose both from self-fertilized ancestry and from hybrids of such ancestry. Approximately 5% of mutants were observed in 1 variety. If small "inconvenient" mutants were included the number perhaps should be 10%. Small mutations of every kind are extremely frequent in *A. majus*. These changes are in no way monstrous or pathologic but remain within the norm. These small factors must play an important rôle in evolution. A number of continually mutating factors occurred in which different rates of mutation were evident. From this behavior it was concluded that individual genes in such cases may have their own individual type of mutation or that a gene may be to a certain extent labile. The ability to mutate might be said to be a heritable character of a gene. Two different types of genic mutations were observed—mutation of a single gene and muta-

tion of homologous genes at the same time. Selection within a clone gave results similar to that within a sexual progeny. Wild species were more or less highly self-sterile. Garden races, although mostly self-fertile, show a certain degree of self-sterility which varied in different races. The attempt to bring degeneration due to inbreeding into relation with homozygosity the author considers unsatisfactory.—V. H. Florell.

4883. BELLING, JOHN. Homologous and similar chromosomes in diploid and triploid hyacinths. *Genetics* 10: 59-71. *Fig. 1-8*. 1925.—The diploid hyacinth, "Yellow Hammer," has 4 long, 2 medium, and 2 short pairs of chromosomes. The ratio of lengths of these 3 classes of chromosomes in the pollen grains is about 4:2:1. In the triploid hyacinths there were 8 trivalents: 2 pairs of large, 1 pair of medium, and 1 small pair.—Karl Sax.

4884. BLARINGHEM, L. Sur l'état infantile des embryons de certains hybrides de blé. [The early state of the embryos of certain hybrids of wheat.] *Bull. Soc. Bot. France* 72: 341-351. 1 *pl.*, 2 *fig.* 1925.—A brief description is given of the development of the wheat kernel from the time of fertilization to maturity. The length, width and thickness of the grains, size of embryo and size and shape of the brush of the hybrid grains obtained from different species crosses of *Triticum* are compared with those of the parents of these crosses. The paper deals largely with the crosses between *T. vulgare* and *T. monococcum* with *T. durum* and its related forms *T. turgidum*, *T. monodurum* and *T. Cienfuegos*. Hybrid grains obtained from crosses of *T. vulgare* and *T. spelta* with *T. dicoccoides* were also studied.—F. R. Immer.

4885. BLARINGHEM, L. Sur une fascie de *Petasites officinalis* Moench. et la sexualité des fleurons des capitules anormaux. [Sexuality in the flowers of the abnormal inflorescences of *Petasites officinalis*.] *Rev. Path. Vég. et Entomol. Agric.* 12: 131-132. 1924.—A bud mutation is reported, where arrest of inflorescence differentiation was concomitant to an increase in the proportion of sterile flowers to 10% instead of the normal 1, 2, or 3%. It is concluded as a general law that arrested development and persistence of juvenile characters in cells or tissues result in sterility of dependant flowers.—J. Dufrenoy.

4886. BLARINGHEM, L. Sur un hybride stérile de pavot oeillette (*Papaver somniferum* L. var. *nigrum* DC.) et d'un pavot sauvage (*Papaver setigerum* DC.). [A sterile hybrid of field poppy (*P. somniferum*) and a wild poppy (*P. setigerum*).] *Bull. Soc. Bot. de France* 72: 623-627. 1925.—Crossing experiments in 1924 and 1925 show that wide differences exist between these 2 species which are not apparent from observation of their external morphological characters. The combination of *P. somniferum* × *P. setigerum* gives plants having the dwarfed and precocious character of *P. setigerum*. The plants are knotty, the number of stamens is reduced to $\frac{1}{10}$, the stamens are open and the pollen aborted, and the number of stigmatic bands ranges from 3 to 6. This sterile hybrid presents all the paternal characters dwarfed.—J. Beauverie. (*Transl. by Mary Ellen Peck.*)

4887. BLARINGHEM, L. Sur un nouvel hybride, fertile, d'*Aegilops* et de Blé (*Aegilops ventricosa* Tausch × *Triticum turgidum* L.). [A new fertile hybrid of *Aegilops* and wheat.] *Compt. Rend. Acad. Sci. Paris* 181: 807-809. 1925.

4888. BREITENBECHER, J. K. The inheritance of a macula mutation concerned with elytral spotting and latent traits in the male of *Bruchus*. *Biol. Bull.* 49: 265-274. 1925.—The wild type ♀ has 2 circular black spots, anterior and posterior, and a thin horizontal line of white pubescence along the inner edge of each elytron. Since the elytra of the wild type ♂ is unmarked, the sexes are easily distinguished. This ♀ pattern, less pronounced, appeared as a dominant mutation, macula, *M*, in a ♂. Its presence can be distinguished in females only by genetic test as all females are spotted. *MM* ♀ by *mm* ♂ produced spotted females, 422, and spotted males, 412; *mm* ♀ by *MM* ♂ produced spotted females, 488, and spotted males, 483; *Mm* ♀ by *Mm* ♂ produced spotted females, 1079, spotted males, 994, non-spotted males, 323; *Mm* ♀ by *mm* ♂ produced spotted females, 1375, spotted males, 679, non spotted males, 658; *mm* ♀ by *Mm* ♂ produced spotted females, 1415, spotted males, 786, and non-spotted males, 798; *Mm* ♀ by *MM* ♂ produced spotted females, 701, spotted males, 654; *MM* ♀ by *Mm* ♂ produced spotted females, 236, spotted males, 213.—P. W. Whiting.

4889. BRIDGES, CALVIN B. Elimination of chromosomes due to a mutant (*Minute-n*) in *Drosophila melanogaster*. *Proc. Nation. Acad. Sci.* [Washington, D. C.] 11: 701-706. 1 *fig.* 1925.

4890. BRIDGES, CALVIN B. Haploidy in *Drosophila melanogaster*. Proc. Nation. Acad. Sci. [Washington, D. C.] 11: 706-710. 2 fig. 1925.

4891. BUSSE. Welchen Einfluss übt das Alter der Mutterkiefer auf die Nachkommen-schaft? [What influence does age of mother-tree have upon the progeny?] Zeitschr. Forst- u. Jagdw. 56: 257-286. 1924.—A summary is given of observations with Scotch pine (*P. sylvestris*) seed, seedling and transplants derived from stands representing various age classes from 30-150 years old. The conclusions are: (1) The seed of younger mother trees is larger and heavier than that of older trees; (2) percentage of germination is not governed by age; (3) the larger and heavier the seed, and the younger the mother trees the more rapidly and strongly do the progeny develop; (4) the advantage gained in earliest youth is overcome by the progeny of older trees within the 1st decade. There is no foundation for the belief that the seed of younger trees is inferior; on the other hand, there is reason for believing that the seedling coming from the young parent is better than that from the older.—J. Roeser.

4892. CHEN, SHISAN C. [Variation and evolution in Chinese goldfish.] (Chinese.) Ko-Hsueh [Science-Publ. Chinese Sci. Soc.] 10: 304-330. Pl. 1-8, fig. 1-10. 1925.—This is a popular version of the following Entry.—Chunjen C. Chen.

4893. CHEN, SHISAN C. Variation in external characters of goldfish, *Carassius auratus*. Contrib. Biol. Lab. Sci. Soc. of China [Nanking] 1: 1-64. Pl. 1-9, fig. 1-20. 1925.—This is the 1st of a series dealing with the genetics and biology of goldfishes in China; the following topics were studied: An extensive survey of the varieties of goldfish in China, the variable external characters, a biometric study of the variation in different body dimensions and number of scales, a microscopical examination of the coloration elements of the goldfish body, a review of the old Chinese literature concerning the history of variation in goldfish, and a discussion of the bearing of these studies on the evidence and theories of evolution. The author reports that he has investigated all the famous collections of goldfish in Nanking, Yanchow, Shanghai, Tientsin, Kwangtung, Soochow, and Shangtung. It is found that there are 3 different shapes of head—plain, lion, and goose; 4 forms of eye—normal, telescopic, skyward, and bubble; and 3 kinds of scale—normal, transparent, and pearl. The color of goldfish may be gray, black, brown, bronze, blue, orange, or white. The distribution of colors on the body may be uniform, spotted, or dappled. From a review of old Chinese literature, it is stated that the domestication of goldfish began in the Sung dynasty (960-1278). "In the beginning the domesticated goldfish was probably similar to the wild goldfish in body form but differed in having a golden orange color. White and spotted races originated before or during the Ming dynasty (1368-1643). The paired caudal fin and the dorsal-finless condition originated before 1726, the former had its origin probably some time after 1488." The writer also points out that variation in the external characters of goldfish substantiates the theory of evolution, and the facts derived from the present investigation support the mutation theory in its modern form.—Chunjen C. Chen.

4894. CHODAT, R. La génétique dans un croisement de poules. [The genetics of crosses in poultry.] Compt. Rend. Soc. Phys. Hist. Nat. Genève 38: 17-21. 1921.

4895. COUNCIL OF SOCIAL AGENCIES. The study of a New Haven family known to twenty different organizations. 12 p. The Connecticut Soc. Mental Hygiene: New Haven, Connecticut, 1924.—A report is given of a family which has received attention from 20 different organizations since 1907. The father has a limited but relatively normal mentality. The mother is of inferior intelligence and altogether incompetent to meet the serious problems presented by 8 children. The children vary in intelligence but all examined are definitely below normal. The report emphasizes the futility of corrective measures at this stage and points out the need of preventing marriages such as this.—P. C. Mangelsdorf.

4896. DANIEL, LUCIEN. L'hérédité chez l'*Helianthus tuberosus* Dangeardi. [The heredity of *Helianthus tuberosus* Dangeardi.] Compt. Rend. Acad. Sci. Paris 181: 1087-1089. 1925.

4897. DANIEL, LUCIEN. Sur des hyperbioses de soleil et de topenambour. [Some "hyperbioses" of sunflower and Jerusalem artichoke.] Rev. Bretonne Bot. 1: 48-56. 6 pl. 1922.—A report is given of observations of a series of sunflower grafts upon the Jerusalem artichoke. From his studies the author concludes that grafting favors the appearance of monstrosities and that certain of these variations may be heritable.—P. D. Strausbaugh.

4898. DART, RAYMOND A. The African manlike ape skull. *Sci. Monthly* 20: 334-336. 1925.

4899. DEMEREC, M. Genetic relations of five factor pairs for virescent seedlings in maize. New York [Cornell] Agric. Exp. Sta. Mem. 84. 1-38. 1924.—“Virescent” is a name applied to a group of recessive seedling characters in maize, in which the development of chlorophyll is retarded. The chlorophyll disorder is limited to the early seedling stages and mature plants are green. The author recognizes 5 genetically different types of virescent to which he assigns the symbols V_1 to V_5 . The double recessive condition is somewhat lighter than either parent type. The type V_1 belongs to the *C-Sh-Wx* linkage group, the order being *C-Sh-Wx-V_1*. The type V_4 is linked with *Lg* and *B* and possibly with *D*. The order of these genes is *Lg-B-V_4*. Thirteen other linkage tests were made between the several virescents and other factor pairs without evidence of linkage.—*J. H. Kempton*.

4900. DEMEREC, M. Inheritance of pale green seedlings in maize. *Genetics* 10: 318-344. 1925.—Five types of pale green maize seedlings are described and designated *Pg 2*, *Pg 3*, *Pg 4*, *Pg 5*, and Xn_2 . These chlorophyll disorders are recessive to the normal green and highly lethal. Attempts to prolong their life by the use of soils of different fertility, under lights of different duration and intensity and under different temperatures were unsuccessful. The xanthophyll and carotin content in all 5 types was found to be normal, the deficiency being one of chlorophyll. Intercrosses between the 5 types established their genetic independence. *Pg 2* was found to be linked with dwarf (*Dd*) with 32% crossing-over and *Pg 3* is linked with brown aleurone color (*Bu bu*) with 4.5% crossing-over. Numerous other factors were tested but no other linkages were found.—*J. H. Kempton*.

4901. DETLEFSEN, J. A. Linkage of a dilute color factor and dark-eye in mice. *Genetics* 9: 247-260. 1924.—Extreme dilution of color is linked with dark eye. Linkage values average 8%, which is lower than that found by Dunn for color and dark eye. Prenatal elimination of pink eyed forms probably accounts for the lowering. A special method for obtaining probable errors is suggested for cases where total crossovers are derived from a single visible parental or crossover class.—*E. C. MacDowell*.

4902. DRUMMOND, J. M. F. Potato breeding. *Misc. Publ. Scotland Bd. Agric.* 5. 64-72. 1925.—The term “variety” in the case of the potato is thought to be misleading, at least in the sense in which it applies to cereal varieties. Theoretically all the plants of a so-called potato variety ought to be identical. Modifications due to conditions of growth may be temporary or due to the fact that the stock originally came from 2 or more individuals that were not identical or they may be the result of vegetative mutation or bud sporting. Many of the practically important features of the potato are undoubtedly heritable, as flesh-color, skin-color, depth of eye, type of stem and immunity or susceptibility to wart disease. There is no reason to doubt that desirable strains can be isolated. The adoption of pure line breeding is urged as the only way in which strains can be obtained, the behavior of which in crossing can be accurately foreseen. The author raises the question as to how far the characters known to be heritable can be referred to Mendelian factors, that is, to what extent can the breeder combine them according to simple arithmetical rules. Attention is called to the fact that tuber-character inheritance has been most naturally studied; shallow eye is known to be dominant to deep eye. Skin color segregations are given with calculated F_1 and F_2 generation ratios. Inheritance of wart immunity is illustrated. Four different types of immunes are mentioned: (1) Pure or homozygous immunes, (2) immunes which on selfing give 3 immunes to 1 susceptible, (3) immunes which on selfing give 15 immunes to 1 susceptible, and (4) immunes which on selfing give 9 immunes to 7 susceptibles. A satisfactory method of conducting cropping tests is of vital importance. The value of effective measures of registration, inspection and control and commercial stocks are also stressed.—*W. Stuart*.

4903. EMBERGER, LOUIS. *Pistacia Saportae*, Burnat. *Bull. Soc. Bot. France* 72: 367-368. 1925.—The author reaffirms the judgment of previous observers—Bornet, Saporta and Marion, Burnat, John Briquet, etc.—as to the hybrid nature of *Pistacia Saportae*, a form which combines the persistent leaves of *P. Lentiscus* with the shape and size of those of *P. Terebinthus*. The author adds the bois de la Colombière in the neighborhood of Montpellier to the known range of *P. Saportae*.—*Mary Ellen Peck*.

4904. FETCHER, R. Die Zweigruppenmethode. [The two-group method.] Zeitschr. induct. Abstamm.- u. Vererb. 38: 124-133. 1925.—Well-known difficulties of human genetic analysis may be obviated to some extent by the method suggested by the author. For example excess of ♂ births may be due to the same probability in all fraternities or there may be 2 or more types of fraternities differing in the ♂ producing tendency. Fraternities are arranged according to whether the 1st born is ♂, Group A, or ♀, Group B. Correcting for unintentional selection according to Weinberg's method of proof by omitting the 1st born, it follows that if fraternities differ in their ♂-producing tendency the ratio of males to females in Group A is greater and in Group B is less than the ratio of males to females in corrected Group A plus corrected Group B. The more strongly the ♂-producing tendency differs in the various fraternities, the greater will be the departure of sex ratio in corrected Group A and corrected Group B. By dividing Groups A and B into sub-groups according to sex of 2nd born and applying the same method it is possible to analyse minor differences within groups as far as numbers permit. We can test hereditary tendency by classifying parents as of Group A or Group B. According as offspring of $A \times B$ tend toward offspring of $A \times A$ or $B \times B$, we can determine dominance. By classifying according to sex we can test for sex-linkage. The 2-group method is not economical for such well-marked traits as hair-lip and polydactyly, but should be useful for sex-ratio, body size, head form and psychic traits.—P. W. Whiting.

4905. FRIMMEL, FRANZ. Über die praktische Bedeutung der Bastarde erster Generation für die Tomatenzüchtung. [The practical importance of first generation hybrids in tomato growing.] Zeitschr. Pflanzenzucht. 10: 453-466. Fig. 1-4. 1925.—The results of testing a large number of F_1 hybrids between varieties of different type are summarized. Dominance of red over pink and yellow, pink over yellow, round over plum-shaped or pear-shaped fruit is noted. Hybrids between large fruited and small fruited varieties of the same fruit shape tend to resemble the small fruited parent. In number of fruits the hybrids tend to resemble the many fruited parent. Hybrids between early and late varieties are intermediate in earliness. High yielding hybrids may be expected only when both parents are relatively productive. A cross between Lucullus and Prinz Borghese, which yields 30% more than the parental average, is recommended for commercial growing. Technique of crossing is described. It is estimated that 2 workers can produce $3\frac{1}{2}$ kilos of crossed seed in 30 days, and that additional cost of crossed seed is repaid 100 times by increase in yield of good hybrids. Use of crossed seed is recommended only when the crop is grown under intensive conditions.—P. C. Mangelsdorf.

4906. GATES, R. RUGGLES. Size-inheritance in plants and animals. (Abstract.) Rept. British Assoc. Adv. Sci. 1922: 400-401. 1923.—The article calls attention to the fact that the customary interpretation of size inheritance in terms of several cumulative Mendelian factors may not apply to all cases of variability in F_2 generations. The author has observed for 5 generations crosses between a large flowered form, *Oenothera rubricalyx*, and the small flowered *O. biennis*. The F_1 was uniform and intermediate but later generations showed erratic segregation with different sizes of flowers on the same plant and different lengths of petal in the same flower. The author distinguishes between general size inheritance and the size of repeated parts and considers that the behavior of the latter may be due to the distribution of cytoplasmic differences.—Mary Ellen Peck.

4907. GATES, WM. H. The Japanese waltzing mouse, its origin and genetics. Proc. Nation. Acad. Sci. [Washington, D. C.] 11: 651-653. 1925.

4908. GODFERY, M. J. Three hybrids of *Nigritella nigra* Reichb. Jour. Bot. 63: 313-315. Pl. 573. 1925.—Three natural hybrids, *Nigritella nigra* \times *Orchis maculata*, *N. nigra* \times *Gymnadenia albida*, and *N. nigra* \times *Gymnadenia conopsea* are described and named respectively, *Nigrorchis tourensis*, *Gymnigritella micrantha* and *Gymnigritella suaveolens*.—Mary Ellen Peck.

4909. HAECKER, V. Einige Bemerkungen zu H. Spemann's Münchner Referate. [Some remarks on H. Spemann's München report.] Zeitschr. induct. Abstamm.- u. Vererb. 35: 156-160. 1924.—A defense of the term "phenogenetics" is given and a discussion of the field which it includes.—P. C. Mangelsdorf.

4910. HANSON, FRANK BLAIR, AND FLORENCE HEYS. **Alcohol and the sex ratio.** *Genetics* 10: 351-358. *Fig. 1.* 1925.—Ten inbred generations of normal rats from a single pair gave a total of 710 males and 725 females ($49.41\% \pm 0.89$ males). From the same single pair of ancestors as the normals, 10 inbred generations of rats were raised from parents which in each generation were given heavy doses of alcohol for 100 days before mating; total offspring—897 males and 791 females ($53.13\% \pm 0.82$ males). No single generation shows a significant difference between the sex ratios for the treated and control parents, and later generations show smaller variations in the ratio than the earlier ones. The available data from fowls, rats and guinea pigs "indicate strongly that severe and prolonged administration of alcohol fumes does not have a differential effect upon the sex ratio."—*E. C. MacDowell.*

4911. HAYES, H. K. **Control of soil heterogeneity and use of the probable error concept in plant breeding studies.** *Minnesota Agric. Exp. Sta. Tech. Bull.* 30: 3-21. 1925.—A method of computing an average probable error for the experiment which was called "the deviation from the mean method" was given. Essentially the same method was used as in the ordinary formula for standard deviation, except that the deviation of each plot of each variety from the variety mean was expressed in percentage. Similar results were obtained as by the use of numerous check plots of a standard variety distributed systematically throughout the experimental field. Various methods were tried of using calculated probable errors as a means of estimating the significance of the results. The deviation of the mean and Student's method were compared. A method was given of computing a coefficient of soil heterogeneity when conducting a strain or variety test.—*Author.*

4912. HEILBRUNN, L. V. **Studies in artificial parthenogenesis. V. The anomalous action of mercuric chloride.** *Biol. Bull.* 49: 241-249. 1925.—The writer had previously advanced the theory that membrane elevation in sea urchin eggs is the direct result of lowering surface tension. Mercuric chloride appeared to be an exception to this theory. Dilute solutions of mercuric chloride in sea water cause typical membrane elevation although the reagent presumably does not lower the surface tension. The action of $HgCl_2$ is favored by aging of the eggs, apparently as a result of the removal of CO_2 . The addition of CO_2 prevents membrane elevation by $HgCl_2$. Centrifuging eggs 1 or 2 minutes after treatment with $HgCl_2$ prevents membrane elevation. Solutions of the reagent in contact with the egg lose their power of provoking membrane elevation. The facts lead to the conclusion that $HgCl_2$ reacts with the jelly or cortex of the egg to form chlorine. Chlorine gas is effective in producing membrane elevation because it lowers surface tension. The action of $HgCl_2$ cannot, therefore, be considered an exception to the surface tension theory.—*P. C. Mangelsdorf.*

4913. HOTELLING, HAROLD. **The distribution of correlation ratios calculated from random data.** *Proc. Nation. Acad. Sci. [Washington, D. C.]* 11: 657-662. 1925.

4914. HUXLEY, JULIAN S. **Mutant groups in nature.** *Nature* 116: 497-498. 1925.—Variant types of *Gentiana campestris* L. which are characterized by white corolla and pale green leaves are not infrequently found. Of particular interest, however, is the discovery of entire groups of these variants or mutants in 5 separate localities. The groups varied in number from 20 to several thousand and were almost pure, only an occasional "type" plant being found. This observation is believed to be of interest in showing how easily new mutations may become established in nature.—*P. C. Mangelsdorf.*

4915. HUXLEY, JULIAN S., AND E. W. MACBRIDE. **Genes and linkage groups in genetics.** *Nature* 116: 937-938. 1925.—Two separate communications referring to MacBr. de's review in *Nature* 116: 776.—*O. A. Stevens.*

4916. IKENO, S. **Nachträge zu meiner Angabe über *Plantago contorta*.** [Additions to my remarks on *Plantago contorta*.] *Japanese Jour. Bot.* 2: 39-43. 1924.—In a previous paper the appearance of mutational forms of *Plantago* is explained on the basis of closely linked lethal factors. This interpretation demands that half of the seeds be defective when stocks carrying the lethal factors are selfed. Such material has now been examined and 55.1% defective seeds were found. It is noted, however, that stocks supposed to be free from lethals produce 28.5% defective seeds. The assumption is that these are environmental defectives resulting from the effects of competition. In stocks where 50% of the seeds fail to develop because of their genetic constitution, the competition among the remainder is greatly re-

duced, only a small proportion of environmental defectives are produced, and the expected ratio is disturbed but slightly.—*P. C. Mangelsdorf.*

4917. IMMER, F. R., AND J. J. CHRISTENSEN. The reaction of selfed lines and crosses of of maize to *Ustilago zeae*. *Phytopathology* 15: 699-707. 1925.—Eight parent lines from 3 varieties of maize proved to be homozygous for a particular type of smut reaction under epidemic conditions, were used to study the inheritance of resistance and susceptibility to smut. Crosses within the variety were made between low, medium and high smut strains and F_1 , F_2 and backcrosses were grown. In the F_1 crosses the percentage of smut infection tended to be intermediate and the F_2 closely resembled the F_1 . In 19 backcrosses the percentage of smut infection closely approximated the average of the parents, from which the authors conclude that there is no definite dominance of resistance or susceptibility. Fourteen strains selected for smut resistance under ordinary field conditions were tested under artificially induced epidemic conditions. Of the 14 strains thus tested, 6 proved to be resistant and it is concluded that ordinary field selection aids in obtaining resistant strains but that such strains should be subjected to more rigorous tests.—In the course of the experiments a chlorophyll disorder known as fired leaves was observed. No organism was found associated with this condition.—Crosses between a strain with the fired leaf character and one without it gave, in the F_1 , 5 heavy, 162 medium and 4 without firing. In the F_2 the percentage of plants without the fired leaf character closely approximated 25% but in backcrosses such plants were significantly below 50%. The authors conclude that firing can be adequately explained on the basis of a single factor difference.—Crosses were made to determine whether the fired character was linked with smut resistance since a high smut strain also had fired leaves, but no evidence of a linkage was found.—*J. H. Kempton.*

4918. JOHANNSEN, O. A. Eye structure in normal eye-mutant *Drosophila*s. *Jour. Morphol.* 39: 337-349. Pl. 1-2, fig. 1-11. 1924.—The ommatidium of normal eye of *Drosophila melanogaster* and *D. virilis* differs from that of *Musca* and *Calliphora* in that secondary pigment cells lie approximately in a single plane, the nucleus of the displaced retinula lies relatively more distant, and rhabdomeres are relatively farther apart. Two pigments, wine-red and ochre-yellow, are present. Eyes of the eye-color mutant, "eosin-miniature," "eosin-vermillion," "pink," "purple," "ruby," "sepia," "tinged," "vermillion," and "white," have the same structures and pigments possessed by normal eye, differing only in the amount of distribution of the 2 pigments. The pigments are much reduced in "tinged," "eosin-vermillion," and in the female of "eosin-miniature," and absent in "white" and in the ♂ of "eosin-miniature." Most of the elements of normal eye are also present in mutants "glazed," "spineless-glass," and "wax," although in the 1st, rhabdomeres are more strongly developed than in the normal, while in the others they are either not distinctly differentiated or absent. In all of them, corneal facets are more or less deformed. The pseudococone, shortened in "glaze," is small in "spineless-glass" and entirely wanting in "wax." In most respects "glaze" shows least differentiation. Eye structure in all 3 forms suggests an irregular growth of cells in pupal eye without a corresponding perfecting of imaginal characters.—*Au hor.*

4919. KARPESHENKO, G. D. (Г. Д. Карпещенко.) О хромосомах видов фюасоли. [The chromosomes of Phaseolinae.] (English summary.) Труды Прикл. Бот. и Селекции. [Bull. Appl. Bot. Plantbreed.] 14²: 143-148. 13 fig. 1924-1925 [1925].—The diploid number of chromosomes was found to be 22 in *Phaseolus vulgaris*, *P. multiflorus*, *P. lunatus*, *P. Mungo*, *P. acutifolius*, *P. aureus*, *P. angularis*, *P. trilobus*, *Dolichos Lablab*, *Vigna catiung*, and *V. unguiculata*, and 44 in *Soja hispida*. In *P. multiflorus* and *P. Mungo*, in addition to normal figures, several figures with 44 chromosomes were found.—*M. Demerec.*

4920. KLATT, BERTHOLD, UND HEINRICH VORSTEHER. Studien zum Domestikationsproblem II. [Studies on the problem of domestication.] Bibliotheca Genetica 6. IV + 166 p. 2 fig. 1923.—The book by Klatt and Vorsteher consists of 3 parts. Physica' measurements of wild and domestic dogs are used for an analysis of the problem of domestication. The 1st part discusses the influence of the size of the body (37 dogs of different domestic breeds) on the size of parts of the body.—The influence of sex and age is discussed.—The 2nd part attempts to analyze the influence of domestication on the different parts of the body. Measure-

ments corresponding to those given in the 1st part are reported for a number of wild dogs (wolf, fox, jackal, desert fox, primitive dogs). Some of the effects of domestication which the authors suggest are as follows: Increase of subdermal fat, increase of fat on the intestines, increase of the length of the intestines (the length of the intestines of different breeds of domestic dogs decreases more rapidly than the total body size); the weight of the kidneys probably increases; decrease of the amount of musculature; increase of the weight of the skeleton and its parts (the bones of domestic dogs are relatively thicker than those of the wild species); the size of the brain seems to show a relative decrease in large domestic breeds but a relative increase in small breeds. The 3rd part gives a theoretical discussion of the measurements obtained. Physiological changes and changes in the internal secretions are suggested as main sources for the effect of domestication.—A discussion of Morgan's genetic theories and a criticism of Dubois' hypotheses conclude the book.—*Walter Landauer.*

4921. KOLKUNOW, W. Einige Ergebnisse der Untersuchungen über Dürrewiderstandsfähigkeit bei Kulturpflanzen. [Some results of investigations of drouth resistance in cultivated plants.] Zeitschr. Pflanzenzücht. 10: 297-310. 1925.—Drouth resistant plants, such as millet and corn, have smaller stomatal openings than the less drouth resistant oats and wheat. Also within the common wheat group, varieties are characterized by differences in stoma size. Size of stoma was found correlated positively with water transpired and negatively with yield of wheat, when the substratum carried 30% of its maximum moisture capacity. Quite contrary results were secured with corn varieties. This apparent discrepancy was studied on the basis of Brown and Escombe's law of gas diffusion through a porous membrane and also on the basis that green leaf tissue decomposes CO₂ normally only with an optimum water content. Four lines of Beloturka wheat were secured, showing through 5 years consistent differences in length of stomatal openings. For 3 years under laboratory conditions with 60% moisture in soil, line 73 gave maximum yields of grain and straw, but yields of all lines varied much from year to year probably due to yearly variations in humidity, the only factor not under control. Maximum yields occurred under moist air conditions. With 3 soil moisture percentages (30, 60, and 75) and with uniform humidity, maximum yields were secured from 3 different lines, that with largest stomata giving maximum yields under 75% moisture conditions while the smallest stomatal line had maximum yield, among the 4 lines, with 30% moisture conditions. The 4 lines grown with (1) 60% moisture during the entire season compared with (2) 60% moisture during the early part followed by 30% for the latter part showed maximum decrease in yield from (1) to (2) in the line with largest stomata, and minimum decrease, nearly 0, in the smallest stomatal line. Under conditions of relatively limited humidity and with the soil at 60% moisture capacity, the smaller stomatal lines transpired absolutely more water than the lines with large stomata. The daily transpiration from the larger stomatal lines was the greater until in June when the water balance of these lines became upset, preventing normal CO₂ decomposition. Water balance equals (a) water conduction through the stem / (b) transpiration through the leaf. Cereals are drought resisters of a type maintaining water balance by a decrease of (b) and alfalfa by an increase of (a). In selection of drought resistant plants broad leaf surface should be combined with small stomatal cells. Bluish-green foliage selections with curling leaves under hot and dry conditions are eliminated at once. Cross fertilization is being relied upon for transgressive effects.—*L. R. Waldron.*

4922. КОЗНУКОВ, З. А. (З. А. Кожухов.) Кариотипические особенности культурных тыквенных. [Caryotypic properties of cultivated Cucurbitaceae.] Труды Прикл. Бот. и Селекции. [Bull. Appl. Bot. and Plantbreed.] 14²: 89-96. 1 pl. 1924-1925 [1925].—The diploid number of chromosomes was found to be 14 in *Cucumis sativus* L.; 22 in *Citrullus vulgaris* L.; 24 in *Cucumis Melo* L. var. *gr. reticulatus* Alef. and *C. Melo* var. *gr. melitensis* Alef.; 40 in *Cucurbita Pepo* L. var. *gr. pomiformis*, and var. *aurantia* Alef.; 42 in *Cucurbita Pepo* L. var. *gr. citrulina* Alef.; and 48 in *Cucurbita maxima* Duch., and *C. moschata* Duch.—*M. Demerec.*

4923. КОЗЛОВА, F. I. [Ф. И. Козлова.] К междувидовой гибридизации дынь и тыкв. [Species hybridization in melons and cucurbits.] Труды Прикл. Бот. и Селекции. [Bull. Appl. Bot. and Plantbreed.] 14²: 71-78. 1924-25 [1925].—The cross, *Cucumis Melo trigonus*

Roxb. \times *C. Melo* L. repeated 9 times gave a fruit full of seed. F_1 plants were intermediate, self-fertile and fertile in crosses with both parents. Once in 17 trials a hybrid was obtained between *C. M. trigonus* Roxb. \times *C. Melo* var. *flexuosus* Naud. (tarra). The F_1 plants were intermediate and self-fertile. From 24 crosses made between *Cucurbita maxima* Duch. \times *C. moschata* Duch. 1 well developed fruit was obtained which had only 4 seed. The F_1 plants were intermediate, sterile when self pollinated and fertile with the pollen of parent species.—*M. Demerec*.

4924. KRAFKA, JOSEPH, JR. Development of the compound eye of *Drosophila melanogaster* and its bar-eyed mutant. Biol. Bull. 47: 143-148. 1924.—The primordia of imaginal disks of compound eye arise as invaginations of so-called pharynx and in a 2-day larva are located anterior to and independent of the nerve ganglia of the head, but on the 3rd day migrate posteriorly and fuse with these ganglia. The cell groups, representing the primordia of the ommatidia have been found in the 4-day larva. The ultimate structure of the eye is determined very early in larval life. That nervous system and dioptric system are closely correlated in their development is shown by the reduction in the size of the optic tract in the bar-eyed mutant.—*O. A. Johannsen*.

4925. KRANTZ, F. A. Potato breeding methods. Minnesota Agric. Exp. Sta. Bull. 25. 1-32. Illus. 1924.—Brief reference is made to the discovery of the potato in Peru in the early part of the 16th century and of its probable cultivation for centuries prior to that time. In America most of our present commercial varieties were originated between 1850 and 1890. The author believes that very few of the numerous studies made with clonal selections are of any value in determining whether new genotypes arising through mutations are sufficiently numerous to justify selection in the clone as a means of isolating them. Failure to evaluate properly the effect of such factors as storage, disease, and soil heterogeneity is thought to be responsible for many of the claims made regarding superior yielding capacity of selections or strains. Data are presented on the results from studies made in regard to clonal selection for increased yield; variability between seed stocks of a variety; and for type of tuber. A 5 year study demonstrated that differences in tuber form are not carried over to the vegetative progeny. The studies of methods for securing improved varieties by sexual breeding are discussed under (1) varietal crosses and (2) selection within self-fertilized lines. Comparison is made between F_1 seedlings with the self-seedlings of their parents. A high coefficient of correlation was obtained between vigor of vine growth, yield of tubers, and period of maturity of seedlings in their 1st and 2nd year. In a study of the effect of inbreeding on heterozygosity it was noted that the 2nd generation progeny in 1 cross was less variable than in the 1st. It was also observed that the distinctive variations in character in the 1st generation were no longer present in the 3rd generation. The characters of period of maturity and vigor in 1st year seedlings were found to be correlated with their behavior the 2nd year. Selection in self-fertilized lines was found to be a practical method of securing improved parental material and that the subsequent crossing of the inbred individuals is the most promising as well as most practical method for the further improvement of potato varieties.—*W. Stuart*.

4926. KUNTZE, ROMAN. Analyse génétique de la variabilité de la coloration chez les Coléoptères *Melasoma aenea* L. [Genetic analysis of the variability of the coloring of *Melasoma aenea* L. (Coleoptera).] Compt. Rend. Soc. Biol. 89: 1392-1394. 1923.—Material collected near Lwow (Leopol) shows continuous variation ranging from coppery red, through clear green, green marked with blue, to violet. In 1922, from females taken during mating, there were raised at 15-21°C., with saturated humidity, broods consisting of but 2 phenotypes—clear green and blue. In 1923 females taken hibernating were paired and in 2 cases from blue parents there were green offspring. The author concludes that there are 2 genotypes, blue dominant and green recessive; and from comparison of mothers, supposed fathers and offspring of 1922 material, that coppery red, coppery green and clear green belong to the latter, while violet and green marked with blue belong to the former. To show the effect of environment there were bred individual cultures (1) at 9°-11° with saturated humidity, giving clear green and blue, (2) at 9°-11° with aridity giving clear green and blue with head and thorax marked with green, (3) at 26°-30° with saturated humidity, giving coppery green

and blue, (4) at 26°–30° with variable aridity giving coppery green, blue with violet reflections and violet.—*P. W. Whiting.*

4927. KUO, TAN SIEN, AND FUNG MING CHOU. [Line breeding of Chinese cotton, "Chang Yin Sha Mien" variety.] *Ko-Hsueh* [Science-Publ. Chinese Sci. Soc.] 10: 476–494. 5 pl., 3 fig. 1925.—The origin of the variety and the detailed plan of its line breeding are described. It has been found that the pure line of the variety runs well through 5 years' breeding test (self-pollination). This cotton is said to be the best Chinese variety and it has the following characters: Staple length, about 1 inch; lint index, 5 gm.; lint percentage, 35–42; early maturity; big boll; and high yield. However, the quality of fiber is coarse and the plant has very low resistance to the attack of leaf-roll disease. Field records of plant growth are given in the forms of tables.—*Chunjen C. Chen.*

4928. LENZ F. 2. Die Übersterblichkeit der Knaben im Lichte der Erblchkeitslehre. [The death rate of boys in the light of heredity.] *Zeitschr. Indukt. Abstam.-u. Vererb.* 33: 313–314. 1924.—The author believes that the greater death rate of ♂ infants during the 1st year is due to the operation of deleterious recessive sex-linked factors. He produces supporting evidence to show that when the general infant mortality is high the differential mortality of ♂ infants is low. For the German Empire 1901–1920, for instance, there is a negative correlation between these 2 rates (using Pearson's coefficient) of -0.72 . Furthermore, the differential mortality of males is even higher if only those deaths are considered which are due to inborn weaknesses.—*Edgar Anderson.*

4929. LESAGE, PIERRE. Sur la précocité. Étapes du caractère provoqué au caractère hérité définitivement fixé. Application à la production de primeurs. [Precocity. Stages between an acquired and a fixed hereditary character. Application to the production of early forms.] *Procès-verbal. Acad. Agric. France.* 1924.—Data is given on the inheritance in *Lepidium sativum* of the character of early germination. Seed ripened under glass were observed to sprout early when planted out of doors and to produce plants the seed of which continued to exhibit this character in the 2nd and 3rd generation under the same conditions.—*Mary Ellen Peck.*

4930. LEVITSKII, G. A. (Г. А. Левитский.) О естественных и произвольных изменениях строения цветков у *Veratrum nigrum* L. [Natural and voluntary changes in the flowers of *Veratrum nigrum* L.] *Труды Прикл. Бот. и Селекции.* [Bull. Appl. Bot. and Plantbreed.] 14²: 97–112. 1924–1925 [1925].—*Veratrum nigrum* has both ♀ and ♂ flowers on the same plant. Male flowers are more frequent on lower branches and on poorly developed plants, indicating that ♀ flowers develop when nutrition is poor. To increase the nutrition an incision was made above the lower branches, which normally produce a large proportion of ♂ flowers, this resulting in development of ♀ flowers only; to decrease the nutrition an incision was made below upper branches which normally produced ♀ flowers only, with the result that a large proportion of ♀ flowers was obtained.—*M. Demerec.*

4931. LEVITSKII, G. A. (Г. А. Левитский.) О явлениях недоразвития в органах размножения спаржи—*Asparagus officinalis* L. [The phenomenon of abortion in the organs of reproduction of *Asparagus officinalis* L.] (English summary.) *Труды Прикл. Бот. и Селекции.* [Bull. Appl. Bot. and Plantbreed.] 14²: 113–142. 3 pl. 1924–1925 [1925].—The unisexual flowers of *Asparagus* possess distinct rudimentary organs of the other sex. The rudimentary pistils were studied in a more detailed way and have proved exceedingly variable in dimensions as well as in shape. This variation from specimen to specimen was chiefly conditioned by internal, genotypical causes and, to a very small extent, by conditions of nutrition. The process of abortion of the ovules shows a clearly degenerative character and begins with the nuclei of the inner integument in the 1st stages of the development of the latter. The cells affected by degeneration are compressed by the neighboring cells which have preserved their perfectly normal aspect. Further on the process seizes larger areas of tissue and the growth of the ovule is checked. Besides the usual unisexual specimens of *Asparagus*, individuals were discovered with true bisexual flowers. All former data concerning the latter are unreliable. The author has investigated the fruits and seed of these bisexual flowers in a detailed way. The fruits were small and few-seeded, while the seed showed very characteristic openings in the seed coat; the formation of these openings

was due to the fact that the outer integument had not perfectly grown round the ovule. The author holds that the difference in the nature of the rudimentary pistils of *Veratrum* and *Asparagus* is the expression of 2 stages of regressive evolution—incipient in the 1st plant and final in the 2nd. In agreement with the data obtained, the author suggests a general theory of regressive evolution, representing a process directed and conditioned by internal causes.—*Author*.

4932. LIPPINCOTT, W. A. Poultry breeding records. California Agric. Exp. Sta. Circ. 299. 1-31. 1925.

4933. MACBRIDE, E. W. The blindness of cave animals. *Nature* 116: 818. 1925.—This is a reply to Lankester in *Nature* 116: 745.—*O. A. Stevens*.

4934. McEWEN, ROBERT S. Concerning the relative phototropism of vestigial and wild type *Drosophila*. *Biol. Bull.* 49: 354-364. 1925.—Vestigial *D. melanogaster* is slower in reacting to light than the wild type, even when corrections are made for slipping and flying. These studies meet the criticism of Cole that the differences the author previously found were due to physical limitations of the vestigials causing them to slip and thus make poorer records.—*E. C. MacDowell*.

4935. MARLOTH, R. Sectorial chimera in fruits and flowers. *South African Gard.* 15: 413. *Illus.* 1925.—A sectorial chimera of 2 species of orange is described. The fruit consisted of 4 segments of *Citrus aurantium* (navel orange) and 6 segments of *C. decumana* (shaddock). Each type of tissue exhibited the qualities characteristic of its species. The author discusses the origin of sectorial and periclinal chimeras and attributes the occurrence of this case to the presence of some layers of shaddock tissue, derived from the original graft, on the twig which bore the fruit.—*Mary Ellen Peck*.

4936. MARSLAND, H. A note on the dimensional characters of the pollen grains of cotton with some reference to their inheritance. *Empire Cotton Grow. Rev.* 2: 348-352. 1925.—Different varieties of cotton are found to differ in size of pollen grains. When either Sea Island or Egyptian cotton, which have relatively large grains, was crossed with Upland cotton, which has relatively small grains, the F_1 resembled the Egyptian or Sea Island parent in size of grains. There appears to be no correlation between size of pollen grains and chromosome number.—*T. H. Kearney*.

4937. MAY, H. G. The inheritance of body-weight in poultry. I. In the Cornish-Hamburg cross. *Rhode Island Agric. Exp. Sta. Bull.* 200. 1-34. 1925.—The Hamburgs were $\frac{2}{3}$ as heavy as the Cornish and developed slower, although both breeds attained their full size in 10 months. Both 1st and 2nd generation offspring from the cross between the 2 breeds developed at the same rate as the Cornish breed.—*B. L. Hartwell*.

4938. MAVOR, JAMES W., AND HENRY K. SVENSON. Comparison of the effects of X-rays and temperature on linkage and fertility in *Drosophila*. *Genetics* 9: 588-608. 1925.—The effect of heat treatment and X-rays in modifying the crossover value in the black-purple and purple-curved regions of the 2nd chromosome were compared. Both treatments caused an increase in crossover values and the effect appeared at approximately the same time in both series, from eggs laid on the 6th and 7th day after beginning of the treatments. With the heat treatment increase in crossover values appeared 1 day earlier in the black-purple than in the purple-curved region. Increased crossover values caused by a single 20-minute X-ray treatment persisted for 14 and 15 days. The lethal effect of X-ray doses on eggs in the ovary disappeared 10 days after treatment.—*P. C. Mangelsdorf*.

4939. METZ, C. W. Prophase chromosome behavior in triploid individuals of *Drosophila melanogaster*. *Genetics* 10: 345-350. 1 pl. 1925.—Triploid individuals (females) from Bridges' triploid "race" were examined. In ovarian cells (somatic and oögonial), homologous chromosomes become intimately associated at each cell generation, just as they have been previously shown to do in the case of diploid, tetraploid and other polyploid groups. The present case differs from the others in that the homologues are present in odd, instead of even, numbers. Behavior of an extra Y-chromosome in some triploids is described, and certain peculiarities of chromosome arrangement in the metaphase are discussed.—*Author*.

4940. MICZYŃSKI, CASIMIR. Sur deux nouveaux hybrides du froment. [Two new hybrids of wheat.] *Mem. Ecole Supérieure d'Agric. à Varsovie* 2: 131-138. 1 pl. 1924.—Two 1st generation hybrids obtained in 1918 by E. Malinowski are described.—*Mary Ellen Peck*.

4941. MITSCHERLICH, EILH ALFRED. Der Sorten- und Stammenbauversuch und sein Einfluss auf die Methode der Pflanzenzüchtung. [Varietal and pedigree culture tests and their influence on plant breeding methods.] Mitteil. Deutsch. Landw. Ges. 40: 946-950. 1925.—The author feels that breeding along general lines has gone about as far as possible and that in the future it must take on a more quantitative aspect. He points out that in many cases the observed variations in yield may be due to the especial sensitiveness of a variety to certain conditions, as moisture, temperature, soil acidity, etc. This results in a given variety being the best yielder under certain conditions but taking an inferior position under other, perhaps only slightly different conditions. In the future breeders must recognize this fact and varieties should be selected for special conditions. For crops with wide spacing, tests must be made in the field but those with narrow spacing, as grains, may be bred, selected and propagated in large pots, in which case the soil and other conditions can be controlled.—A. J. Pieters.

4942. MOL, W. DE. De reductie deeling bij eeige Triticum-oorten. [The reduction division in wheat species.] Genetica 6: 289-336. 1924.—The haploid chromosome number was found to be 7 for *Triticum monococcum* and *T. dicoccoides*; 14 for *T. dicoccum*, *T. turgidum*, *T. durum*, and *T. polonicum*; and 21 for *T. vulgare*, *T. compactum*, and *T. Spelta*. The grouping according to chromosome number corresponds to the division based on sterility, serological behavior, and disease resistance.—Karl Sax.

4943. MOSSÉRI, VICTOR M. Note sur la purification et l'amélioration des cotons égyptiens. [The purification and improvement of Egyptian cottons.] Bull. Inst. Egypt 2: 11-33. 1920.—The author reviews the work of Balls and points out the necessity of remedying both the diminution of yield and the deterioration of quality in Egyptian cottons. Yield is the product of 3 factors—number of plants per unit of surface, mean number of bolls arriving at maturity per plant, mean weight of cotton seed in 1 boll. Each of these factors is in its turn subdivided into other factors of which the author has made a study. Quality is the combination of cleanness, color, luster, length, fineness, strength, curliness, elasticity of each fiber, proportion of waste and uniformity of each of these characters. The author has shown that these characters are almost all quantitatively heritable, fluctuating between definite limits of variability and dependent on cultural and climatic conditions. Positive and negative correlations between these characters are given. The method of study involves each year, choice of parent plants, selection of 1st, 2nd, and 3rd generation plants and the growing and comparison of these line pedigrees with selection of the best line for further breeding. The author finds that this method permits the use of seed not more than 6 years from the parent plant and the preservation of advantageous mutant types and new varieties resultant from pure line crosses.—Author (transl. by Mary Ellen Peck).

4944. MOTTET, S. Nouveaux hybrides du Gladiolus primulinus. [New hybrids of Gladiolus primulinus. Rev. Hort. 97: 314-315. Illus. 1925.—The author commends this species for its beauty and plasticity in the creation of new hybrids, and recommends it especially for use in interior decoration. References are given to several papers concerning the species.—R. E. Woodson, Jr.

4945. MUGNIER, L. Un hybride présumé de Rosa gallica et R. glauca aux environs de Langres. Bull. Soc. Bot. France 72: 708-710. 1925.

4946. NOLL, C. F. Studies of inheritance of earliness in certain Avena crosses. Pennsylvania Agric. Exp. Sta. Bull. 194. 1-43. 1925.—Fifteen parental varieties were used. Various crosses were made and the inheritance of earliness was studied. In general, earliness appeared to be dominant to lateness and the F_2 data supported the hypothesis of multiple factors. Homozygous races were obtained in F_3 and F_4 which were earlier than the early parent and others that were later than the late parent. There is an indication of a similar effect for each factor involved, each factor causing an average difference in period of maturity of about $2\frac{1}{2}$ days.—H. E. Brewbaker.

4947. PALMER, E. J. Is Quercus arkansana a hybrid? Jour. Arnold Arboretum 6: 195-200. 1925.—The author gives the history and description of an oak intermediate in character between *Quercus marilandica* and *Q. nigra*. The supposed hybrid, named *Quercus arkansana* by B. F. Bush who first discovered it in 1909 growing along Yellow Creek in Hemp-

stead Co., Arkansas, is thought to be identical with one discovered earlier in Pike Co., Alabama, by Charles C. Mohr. Seed from the Arkansas specimens were planted at the Arnold Arboretum in 1909. The seedlings show no more variation than is common in oak species and resemble the parent trees. The author does not consider the oak a hybrid but a relic of a species nearing extinction and limited in its present widely separated distribution by the peculiar ecological conditions it requires.—*Mary Ellen Peck.*

4948. PARKES, A. S. The age of attainment of sexual maturity in the albino mouse. Jour. Roy. Microsc. Soc. London 1925: 315-319. 2 pl. 1925.—Spermatozoa are 1st produced during the 6th week of the life of the ♂. Ovulation 1st occurs during the 8th week of the female's life, and conception may occur at any oestrus after this time.—*Ralph E. Cleland.*

4949. PASCHER, A. [Review of: KNIEP, H. Über *Fucus-Bastarde*. (*Fucus* hybrids.) Flora 118/119 (Goebel-Festschr.): 331-338.] Arch. Protistenk. 52: 376-377. 1925.

4950. PEACOCK, A. D. Haploidy in the male sawfly (Tenthredinidae) and some considerations arising therefrom. Nature 116: 537-538. 1 fig. 1925.—From breeding work on *Pteronidea ribesii* the author concludes that females are diploid, and males, whether produced by virgin females or in bisexual broods, are haploid. By cytological work on *P. melanaspis* the author finds that the spermatogonial and spermatocyte number is 8, there are 2 maturation divisions but no reduction, and there are no abnormal divisions such as occur in hornets and hive bees.—*P. H. Whiting.*

4951. PEARL, R. Studies in human biology. 653 p. 123 fig. Williams and Wilkins: Baltimore, 1925.—This is a collection of papers dealing with the biometric analysis of data on several human traits, with vital statistics, public health, epidemiology and population. The material in all except 3 of the 25 chapters has appeared in papers published by the author between 1903 and 1924. Several of these papers have been revised and edited for this volume, but for the most part the original papers have been reprinted. The chapters consisting of reprinted material are as follows: Weight of the human brain; Intelligence and size of head; Race crossing and the sex ratio; The sex ratio among the Jews (by R. P. SALAMAN, and R. N. SALAMAN); Congenital malformations; Centering infant mortality; Mortality and evolution; The vitality of the peoples of America; Constitution and tuberculosis; The longevity of the parents of the tuberculous and the cancerous; Comparing the mortality of man with that of other animals; National food consumption, Food waste; Index of the age distribution of a population; Some biological factors in the epidemiology of influenza; The incidence of influenza among the tuberculous; Epidemic encephalitis; The statistical evaluation of public health activities; The population problem; Biology and war; The stability of England's population growth; The curve of population growth.—The material published for the 1st time comprises a study of the birth-death ratio for the population of the U. S. Registration Area from 1915 to 1921, in which it is found that this ratio for the foreign-born tended to decrease, while for the native born it tended to increase, although the foreign-born ratio has remained significantly above the native-born ratio. The ratio for the colored population has tended to increase at about the same rate as the ratio for native born whites, and remains below the latter.—A new chapter by R. PEARL, AND PAUL R. HAWLEY deals with the influence of physical activity upon mortality. The data consist of the mortality statistics for English males, 1910-1912, classified according to occupation. When the occupations were grouped according to the amount of physical energy involved, it was found that high mortality is associated with hard physical labor from age 40-45 on. In younger males there is no association.—In the concluding chapter by R. PEARL, AND LOWELL J. REED, on "The growth of human population," the curve of population growth, previously proposed by the authors, is discussed and applied to the census counts of 16 different countries and 1 city. It is concluded that this curve describes accurately the growth of all of the populations considered.—*L. C. Dunn.*

4952. PRIDHAM, J. T. Plant breeding possibilities. Agric. Gaz. New South Wales 36: 817-818. 1925.

4953. RICH, F. A. Concerning blood complement. Vermont Agric. Exp. Sta. Bull. 230. 3-24. 4 pl. 1923.—Guinea pig blood constitutes the main laboratory source of complement and it has generally been assumed that all cavies possess this character. In 1 stock, how-

ever, several complement-deficient animals were found. Complement-deficient animals mated *inter se* produced only low complement progeny; mated with complement-positive animals of the same stock, produced progenies of which all were normal or $\frac{1}{2}$ were complement-deficient. Complement-deficient males mated with unrelated normal females gave 709 normal F_1 offspring. Interbreeding F_1 progeny gave 907 complement-positive and 302 complement-deficient animals. The normal complement condition is dominant and is designated by the factor symbol *C*. The wide variability of complement content of the complement-deficient animals suggests additional modifying factors but selection within this group gave negative results. Complement character is not affected by dietary change, castration, or pregnancy. The opsonic index of the sera of complement-deficient pigs is about $\frac{1}{2}$ that of sera of normal animals. Recessive animals are more susceptible to infections of *B. suis* and *B. cholerae suis* than normal pigs and are generally weaker and shorter lived. Attempts to introduce active complement from normal individuals into the vascular system of deficient animals gave negative results. Complement introduced into the blood stream of complement-deficient pigs is quickly and completely dissipated.—P. C. Mangelsdorf.

4954. RICHEY, FREDERICK D., AND L. S. MAYER. The productiveness of successive generations of self-fertilized lines of corn and of crosses between them. U. S. Dept. Agric. Dept. Bull. 1354. 1-17. Pl. 1-8. 1925.—The yield of 70 F_1 crosses between lines of corn self-fertilized for 6 generations before crossing ranged from considerably less to considerably more than the yield of the parent variety. The average yield of 3 of these crosses was 30% more than that of the parent variety and significantly more than the F_1 varietal cross Whately \times St. Charles White, which has been outstanding in a number of varietal comparisons in northeastern Arkansas. Comparisons between successive generations of self-fertilized lines and between crosses following self-fertilization for different numbers of generations show the importance of selection in obtaining larger yields by the methods followed, and indicate that the principal rôle of self-fertilization is to isolate definite lines among which selection may be practiced. It is necessary for practical reasons to have inbred lines that are in themselves productive. The data indicate, however, that there is little or no relation between the productiveness of the self-fertilized lines and that of their crosses and that the final value of the lines for crossing must be determined by comparisons of the productiveness of their crosses.—F. D. Richey.

4955. RIEDE, W. Beiträge zur Geschlechts- und Anpassungsproblem. [Sex and adaptation.] Flora 118-119: 421-452. 1925.—This paper deals with the relation between cultural conditions and the occurrence of monoecism, dioecism, polygamy and monoclony in *Betula verrucosa*, *Salix fragilis*, *Cannabis sativa*, *Doronicum*, and *Calendula*. External factors determine the presence in the plant of definite substances or combinations of substances (soil salts, photosynthate, etc.) which act as a determinative stimulus to the primordia.—There is a discussion of *Glycine soja* (*Soja hispida*) as it appears in cultivation in Germany, and the relation of the so-called adapted lines to the whole species. No change of genotype has been shown to exist. A passive adaptation may be due to the suppression of certain lines.—A. G. Stoekey.

4956. RIVIÈRE, G., ET G. PICHARD. De la postérité de l'*Amygdalopersica* Formonti (L. Daniel). [The progeny of *Amygdalopersica* Formonti.] Compt. Rend. Acad. Sci. Paris 181: 525-526. 1925.

4957. ROSENBERG, O. A cytological basis for the production of species by hybridization. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 453. 1925.

4958. ROTMISTROW, W. Eine der Ursachen der Mannigfaltigkeit in der Natur. [One of the causes of variation in nature.] Zeitschr. Indukt. Abstamm.- u. Vererb. 37: 343-357. Fig. 1-5. 1925.—Pollen grains stained with a preparation of methyl green and glycerin rendered slightly acid by the addition of acetic acid, show nuclei stained but wall and cytoplasm relatively clear. Differences in size and shape of vegetative and generative nuclei were found in many species and variation in the number of nuclei was also evident, especially in *Convallaria majalis*, *Tradescantia virginica*, *Avena sativa*, *Hordeum sativum*, and *Sambucus nigra*. The number of nuclei observed ranges from 1 to 4; 1 vegetative and 3 generative

nuclei were found in *Tradescantia*; 1 vegetative, 2 generative nuclei are frequent in *Avena* and *Vicia* before the germination of the pollen tube. It is suggested that irregularities in the number of generative nuclei in the pollen grain is one of the causes of variations or mutations in plants, assuming that the extra nuclei take part in fertilization.—*P. C. Mangelsdorf*.

4959. SAX, KARL, AND E. F. GAINES. A genetic and cytological study of certain hybrids of wheat species. Jour. Agric. Res. 28: 1017-1032. Pl. 1-2. 1924.—Varieties of *Triticum vulgare* with 21 chromosomes crossed with varieties of *T. durum* with 14 chromosomes result in partially sterile F_1 plants and all degrees of sterility in F_2 . Segregates with intermediate chromosome numbers are eliminated through sterility and ultimately only 14-chromosome and 21-chromosome segregates survive. These segregates resemble the respective parents, indicating that the 7 extra chromosomes of the *vulgare* wheats determine the characters peculiar to this group. Genetic studies indicate that the characters which differentiate the 2 groups of species are not inherited in a simple Mendelian manner, while the characters common to the 2 groups are so inherited.—*Karl Sax*.

4960. SEELIGER, RUDOLF. Gesichtspunkte für eine einheitliche Benennung deutscher Rebenzüchtungen. [Aspects of a uniform system of naming in German grape breeding.] Wein und Rebe 4¹: 1-15. 1922.—The necessity of a uniform system of designating new varieties of grapes is emphasized. A system is suggested which shows at which station the new variety was originated and what method of breeding was used, and makes possible an examination of the complete pedigree records.—*P. C. Mangelsdorf*.

4961. SEELIGER, RUDOLF. Über einige bisherige Erfahrungen und Ergebnisse der Rebenzüchtung. [Some preliminary experiences and results of grape breeding.] Weinbau und Kellereiwirtschaft, 3²¹: (1-8). 1924.—Grape breeding work at the Naumburger Station is summarized. The characteristics of different species and their value for breeding purposes are pointed out. Factors influencing the germination of grape seed have been studied. Increased germination was secured by soaking the seed 24 hours in a 30% solution of various Mn and Mg salts. A mixture of $MnSO_4$ and $MgCl_2$ proved beneficial. Seed from fruit heavily infected with *Botrytis* germinate less readily than seed from lightly infected fruit. Disinfection of the seed bed with Formol or Upsulun decreases the loss from root rot. Inbreeding reduces the viability of the seedlings and the vigor and productiveness of the plants. In *V. vinifera* seedlings there is a correlation between the autumn foliage of the 1st year and the color of the fruit in following seasons. This permits a selection of the desired types the 1st season. The correlation does not hold for other species or for crosses of *V. vinifera* with other sorts. Immunity to Phylloxera is dominant in the 1st generation, but its inheritance is complicated. Resistance to *Peronospora* apparently depends upon multiple factors. An F_1 between resistant and susceptible varieties gave intermediate susceptibility in F_1 . In F_2 considerable variation was found. It is assumed that resistance to this disease depends upon at least 3 factors.—*P. C. Mangelsdorf*.

4932. SEITZ. Fraget die Eichen, wie sie wachsen! [Ask the oaks how they grow!] Zeitschr. Forst.- u. Jagdw. 56: 352-362. 1924.—The article is a discussion of natural selection and crossing as found in sessile oak (*Q. sessiliflora*) and pedunculate oak (*Q. pedunculata*) in Germany, and the prospects of adopting economically the natural variations and of improving strains artificially. Sessile oak is gradually losing out in North Germany because of cross pollination by pedunculate oak. This is due to the coincidence of the flowering time of the staminate flowers of the latter and the pistillate of the former, and to the receptiveness of the ♀ flowers for the pollen of the other species. The tendency in forest management has been to disturb the natural balance of species and it is now our problem to reestablish this natural balance.—*J. Roeser*.

4963. SHOEMAKER, J. S. The significance of chromosome studies in fruit breeding. Sci. Agric. 6: 47-49. 1925.—A preliminary report is given on the chromosome condition in 2 apple varieties—Delicious and Stayman Winesap. The former has 14 haploid chromosomes; the number in the latter varies. By his and similar cytological investigations the author considers such studies significant in fruit breeding from at least 2 standpoints: "(a)—to obtain a better understanding of certain difficulties in securing set of fruit, and (b)—to assist in selecting parents and in obtaining desired improvement of various fruits."—*A. E. Longley*.

4964. SHULL, GEORGE H. To teachers of laboratory genetics. *Science* 60: 316-317. 1924.—*Bursa bursa-pastoris* f. *tenuiloba* arose from a cross between 2 wild strains, and breeds true when selfed. In crosses with f. *rhomboidea* it gives a ratio in the 2nd generation of 1 *tenuiloba* : 2 *heteris* : 1 *rhomboidea*. Since the 3 forms are distinct and easily separated, even in the rosette stage, they provide promising material for elementary laboratory work. To those who will respond promptly, an offer of selfed seed of the 3 types is made. Cultural directions are given.—*Edgar Anderson*.

4965. SINСКАЯ, E. N. [E. H. Синская.] Индау. Малонизвестное маслинное и салатное растение (*Eruca sativa* Lam.)—[Indau. *Eruca sativa* Lam.] (English summary.) Труды Прикл. Бот и Селекции. [Bul. Appl. Bot. and Plantbreed.] 14²: 148-179. 3 fig. 1924-1925 [1925].—Experiments were made with seed collected by N. I. Vavilov in Bokhara, Turkestan and Persia. *Eruca sativa* is a cross pollinated plant. One year, 32% of isolated plants set seed and in the other, 50% of the plants. A list of characters is given by which different forms of *E. sativa* are characterized.—*M. Demerec*.

4966. SMITH, G. ELLIOT. The question of race and hormones. [Rev. of: SHIROKOGOROFF, S. M. Process of physical growth among the Chinese. Vol. 1. The Chinese of Chekiang and Kiangsu measured by Dr. V. Appleton. vi + 137 p. The Commercial Press: Shanghai, 1925.] *Nature* 116: 855-856. 1925.

4967. SPÖTTEL, WALTER. Über Variabilität, korrelative Beziehungen und Vererbung der Haarfeinheit bei Schafen. [Variability, correlative relationships and inheritance of fineness of hair in sheep.] *Bibliotheca Genetica* 7. 1-230. 4 fig. 1925.—The 1st part gives the methods which the author and previous investigators employed for measuring the diameter of the hair. He points out the different physiological factors influencing thickness of hair.—The 2nd part is a report of measurements obtained for different breeds of sheep (Merino, Württemberger improved sheep, Hampshiredown, Oxfordshiredown, Suffolk, Leine, Rhön and Moorland sheep). Only a very few show distinct race differences in hair thickness. Asymmetrical frequency curves are prevalent.—The 3rd part deals with the correlations between fineness of wool and other morphological and physiological characters. The author believes that fineness of hair is controlled by internal secretion.—The last part reports Spöttel's investigations on inheritance of fineness of hair. Moufflon-Merino and Somali-Merino crosses have been observed. The conclusion is reached that for a factorial explanation of inheritance of fineness of hair, 7 multiple factors must be assumed for the coarse Moufflon hair and in addition 5 factors for the different amounts of intermediate hair types present. Furthermore, the Moufflon condition of hair must be assumed as being heterozygous. The condition in the Somali-Merino crosses is very much the same. Spöttel prefers to explain his results as a consequence of "impure segregation."—*Walter Landauer*.

4968. STOUT, A. B., AND C. F. CLARK. Sterilities of wild and cultivated potatoes with reference to breeding from seed. U. S. Dept. Agric. Dept. Bull. 1195. 1-32. 8 pl. 1924.—Nearly all of the most valuable varieties now in cultivation have been obtained from sexual reproduction. Male sterility is regarded as one of the greatest difficulties in potato breeding. Four general types of sterility are recognized—(1) sterility due to nonflowering; (2) to one-sided impotence or intersexualism; (3) sterility of hybrids involving both ♂ and ♀ impotence and (4) sterility from incompatibility. Some of the reasons advanced for (1) are the influence of such conditions as light, temperature, plant food, etc., on the blooming of variety. The advantages of a cool climate for successful potato breeding are emphasized. The desirability of determining whether a plant or a clonal variety is able to function as a hermaphrodite, as a ♀, as a ♂ or perhaps as neither, is emphasized. Studies of maleness and femaleness are essential. The senior author made a special study of the type and viability of pollen of many cultivated and of 4 wild species. No pollen germination could be obtained in a liquid medium but excellent germination was secured with viable pollen when 1 gm. of agar and 15 gm. of cane sugar were added to 100 cc. of distilled water. Smears of this media on a glass slide were sprinkled with pollen grains after which the slide was placed in a moist chamber at room temperature. As a result of these studies the cultivated varieties of potatoes were divided into 4 groups on the basis of (1) condition of anthers (2) quantity of pollen shed (3) relative number of grains with granular contents and (4) extent and vigor

of pollen germination. The junior author's studies related to the ability of cultivated varieties to produce seed. As a result of a large number of artificial pollinations it was possible to group the varieties studied into 4 classes: (A) Varieties highly productive of seed balls when pollen of varieties in class 1 were used.—(B) Feeble production of seed balls to the viable pollen in class 1.—(C) No production of seed balls with seed to any pollination.—(D) Tendency to produce parthenocarpic and seedless fruits, evidently without fertilization.—Known hybrids of *Solanum fendleri* and *S. chacoense* were studied for impotence of pollen. From 1 to 6 pollen germination tests were made from each of the 29 hybrid seedling plants. Plump pollen grains were found to be scarce and only 5 short pollen tubes were seen. Tests conducted at the same time with pollen of the parent plants using the same media gave excellent germination. Crossing the hybrid plants with parent plants resulted in failure. Sterility from incompatibility is not thought to occur in cultivated varieties when potent pollen is used.—*W. Stuart.*

4969. STROMAN, G. N. **Biometrical studies of lint and seed characters.** Texas Agric. Exp. Sta. Bull. 332. 1-20. 1925.—Statistical constants of yield of lint and of seed per plant, percentage of lint, length of lint and number of 5-lock and of 4-lock bolls are given for 16 varieties of Upland cotton grown at the Texas Station in 1924. Positive correlations were detected between yield of lint and of seed, yield of lint and number of 5-lock and of 4-lock bolls and yield of seed and number of 5-lock and of 4-lock bolls. Lint percentage and length of lint were not consistently correlated with one another nor with any of the other characters.—*T. H. Kearney.*

4970. TORREY, HARRY BEAL, AND BENJAMIN HORNING. **The effect of thyroid feeding on the moulting process and feather structure of the domestic fowl.** Biol. Bull. 49: 275-287. 1925.—Desiccated thyroid fed to growing chicks produced the following results: The vane of the 1st rectrix was shortened and the proportionate length of the calamus was increased by suppression of proximal barbs and associated barbules. Thyroid feeding tended to maintain continuity between 1st and 2nd generations of rectrices. Thyroid feeding tended to accelerate the differentiation and eruption of the 2nd rectrices. This acceleration of feather growth is believed to be due to accelerated cell division within the feather germ.—*F. A. Hays.*

4971. TORREY, HARRY BEAL, AND BENJAMIN HORNING. **Thyroid feeding and secondary sex characters in Rhode Island Red chicks.** Biol. Bull. 49: 365-374. 1925.—Desiccated thyroid administered by capsule daily to growing Rhode Island Red chicks gave 2 general effects: (1) The plumage grew more rapidly but differentiated later than usual. Male birds at 12 weeks were feathered like females.—(2) Adult plumage, though of the ♂ type, showed characteristics of form and structure like that of the ♀. This difference was especially observable in hackle, saddle, back, and shoulder feathers. Lacing was modified through feeding thyroid to both males and females, by the addition of barbules.—*F. A. Hays.*

4972. TURNER, C. L. **Studies on the secondary sexual characters of crayfishes IV. Males with two sets of supernumerary male characters.** Biol. Bull. 49: 375-378. 4 fig. 1925.—Among other anomalies in the secondary sexual characters of crayfishes found in Wisconsin there are a few males with 2 sets of supernumerary ♂ characters. The supernumerary characters take the form of extra pairs of copulatory hooks situated upon the 2nd and 4th walking legs when normally there is a single pair located upon the 3rd walking legs. The condition is rare and has been found so far only in *Cambarus propinquus*. The 3 specimens described were all found in a locality which was already marked for the fact that a large proportion (15%) of all the crayfishes found there possess 1 supernumerary character. The above facts are taken as indicating the inheritance of the aberrant characters.—*Author.*

4973. TURNER, C. L. **Studies on the secondary sexual characters of crayfishes V. Males with female characters.** Biol. Bull. 49: 379-380. 1925.—When secondary sexual characters of both sexes have been found upon single specimens of crayfishes, such specimens have been interpreted as females which have developed to some degree the characters of the opposite sex. Two specimens have been secured (1 each of *Cambarus propinquus* and *C. virilis*) which are normal males in every respect except that they possess a single oviducal pore at the base of the 3rd walking leg. These are the 1st males recorded which have ♀ characters

and although extremely rare they are important in that they demonstrate that intersexes in crayfishes may be functional males.—*Author*.

4974. VANDENDRIES, R. Les mutations sexuelles des Basidiomycètes. [Sexual mutations of Basidiomycetes.] Bull. Soc. Roy. Bot. Belgique 58: 28. 1925.—After discussing the characters of *Coprinus radians* the author reviews the value of the following criteria: Outside of anastomoses, the constant fertility of foreign haplonts, and the generality of the change of haploid individuals into diploid individuals. Finally, he examines the constancy of sex in the bipolar heterothallic Basidiomycetes.—*E. DeWildeman (translated)*.

4975. WALLACE, R. British breeds of live stock. 3rd ed. 136 p. 45 pl. Ministry Agric. and Fisheries: London, 1920.—This handbook gives the history and characteristics of British breeds of horses, cattle, sheep, and swine. A list of breed societies with places of sale and average prices of animals of each breed is appended.—*H. C. McPhee*.

4976. WENTZ, JOHN B. Linkage between sweet-defective and sugary endosperm in maize. Genetics 10: 395-401. 1925.—The author reports a close linkage between the sweet-defective endosperm described by Lindstrom and the *su* factor for sugary endosperm, the rate of crossing-over being about 3%.—*J. H. Kempton*.

4977. WETSTEIN, R. Fakultative Parthenogenesis beim Hopfen (*Humulus Lupulus*). [Facultative parthenogenesis in the hop (*Humulus Lupulus*).] Flora 118-119: 600-604. 1 fig. 1925.—The author has investigated the case of parthenogenesis in the hop reported by Kerner in 1893, making his observations and experiments on the identical plant. Careful search was made for stamens or anthers in the ♀ inflorescences but no such abnormality was found. Pollination was prevented by enclosing the flowering branch in a glass cylinder with netting at the ends. Seed were formed, 40 of which germinated the following year, in every case producing ♀ plants. Examination of ovules indicated that the embryo developed from the egg cell. The chromosome number of the embryo was 20—the normal diploid number. It is suggested that the great predominance of ♀ plants in hops is due to facultative parthenogenesis which apparently produces only ♀ plants.—*A. G. Stokely*.

4978. WHITE, R. G. Research work in animal breeding at the College Farm of the University College of North Wales, Bangor. Welsh Jour. Agric. 1: 33-38. 1925.—In 1922 a scheme of research in animal breeding was initiated at the University College of North Wales in co-operation with the Animal Breeding Research Department, University of Edinburgh. The work falls under 4 heads. (1) Wool improvement in Welsh sheep: It is necessary to consider the fleece from the point of view of the manufacturer and of the breeder, particularly with reference to hardiness in the latter case; and to fix biological standards for important fleece characters. The outstanding problem is the elimination of kemp and there are indications that this problem can be solved if the relations of kemp to the birth coat of the lamb (an important point in a mountain breed) are not overlooked. (2) Color inheritance in sheep: Color has been selected in order to provide straightforward problems in the genetics of sheep. The following colors and patterns are being studied: Black color (dominant) in the Welsh breed, badger-face pattern in the Welsh and other breeds, reversed badger-face pattern, and piebald pattern of the Piebald or Spanish breed.—(3) Congenital Abnormalities: Two congenital defects are being studied, the 1st a lethal limb defect in new-born lambs, the 2nd an eyeless condition.—(4) *Inbreeding Experiments*: An experiment involving the close inbreeding of sheep has been initiated.—*Author*.

4979. WINGE, Ö. Über die Vererbung der Haarfarbe der Pferde. [Heredity of hair color in the horse.] Zeitschr. Indukt. Abstamm.- u. Vererb. 24: 1-32. 1920.—The results obtained from study of extensive studbook records indicate that the hereditary behavior of the principal colors (chestnut, bay and black) is due to 2 pairs of factors. *R* is the factor for reddish brown and *S* for black. A black horse lacks the *R* factor but is either homozygous or heterozygous for *S*. Chestnut lacks *S* and may also lack *R*. Bay colored horses have both *R* and *S*. It follows that chestnut × chestnut gives only chestnut; black × black gives only black; but bay × bay gives chestnut, black, and bay. It is not yet certain how many factors are concerned in the production of the different shades of chestnut and bay. The data on inheritance of spotting and gray indicate the occurrence of dominant factors for these conditions.—*H. C. McPhee*.

HORTICULTURE

F. C. BRADFORD, *Editor*

(See also in this issue Entries 4477, 4501, 4507, 4622, 4628, 4653, 4789, 4851, 4852, 4874, 4875, 4882, 4905, 4911, 4931, 4935, 4944, 4961, 4963, 5182, 5395, 5403, 5404, 5405, 5409, 5437, 5489, 5520, 5687)

4980. ANONYMOUS. **Coffee notes, African coffee.** *Tropical Life* 21: 169-170. 1925.—The so-called "grassy flavour" in African coffee is discussed as the principal cause of the decrease in acreage in Uganda. This flavor in the berries is not present at first but seems to develop after the coffee has been kept in storage for some months. The trouble appears to be increasing and is worse in years of drought than in normal or wet seasons. No remedy has yet been discovered and the coffee growers are turning their attention to cotton-production.—*H. N. Vinall.*

4981. ANONYMOUS. **Hedges in our gardens.** *Egyptian Hort. Rev.* No. 66. Jan., 1926.—The number of hedge plants adapted to Egyptian conditions is small. *Duranta plumieri* and *Clerodendron scadens* are the best for general purposes. *Schinus terebinthifolius* and *Lantana camara* are also recommended. Directions are given for their propagation.—*W. Carleton McQuiston.*

4982. ANONYMOUS. **Practical horticulture.** (Translated from the Japanese by CHANG, C. C.) *Jour. Ministry Agric. & Commerce Republic of China* (in Chinese) 11^o: 1-14; 11^o: 1-8. 1925.—*Cucurbita* (squash, Nan Kou). The author mentions 13 horticultural varieties of squash growing in Japan, and their Chinese synonyms, with references. *Cucurbita moschata*, *C. maxima*, and *C. pepo* are commonly cultivated species. After years of study the conclusion is reached that *C. moschata* was the first of its kind under cultivation, this form being from South China. A brief account of the vegetative characteristics of each variety is given, with illustrations. As a whole, the plants thrive in a fairly aerated sandy soil and in dry weather. Excessive soil fertility and prolonged rainy weather, especially during the flowering season, stimulates the vegetative growth of the plants and reduces the number of fruits produced. Forms of squash are commonly found everywhere in Japan. It is estimated on the basis of 4 fruits per plant that 1.6 mow (a mow is about $\frac{1}{3}$ acre) of land will yield 800 fruits. Squash and its seed have a variety of uses in Japanese cookery. Information is given about seed storage; cultural methods are discussed in detail.—*Benicasa cerifera* (Tung Kou); *Cucumis sativus* L. (Hu Kou). For these 2 Asiatic plants the author has made a study of origin, synonyms and distribution. *B. cerifera* was imported into Japan from China in very early times. There are now 8 varieties growing in Japan and Formosa, the characteristics of which, together with methods of culture, are thoroughly discussed. *C. sativus* was first brought to China from Sinkiang (Kokonor) by Chang Chen during the Han dynasty (25-75 A. D.). It is believed to have originated from a wild plant in the Himalaya range, and has been under cultivation for more than 3,000 years. The characteristics and methods of culture are discussed. It is used for food and in medicine.—*C. Y. Chiao.*

4983. ANONYMOUS. **Some notes on almond and walnut growing.** *Jour. Dept. Agric. Victoria* 22: 313. 1924.—Though the almond has been planted mainly as a windbreak, it will pay as a crop producer where the rainfall is sufficient in the Junee and Young districts.—*Wm. E. Lawrence.*

4984. ANONYMOUS. [Rev. of: FARRELL, J. **A book on apple growing.**] *Jour. Dept. Agric. Victoria* 23: 427. 1925.—This paper notes the appearance in book form of papers published in this journal.—*Wm. E. Lawrence.*

4985. ADAM, D. B., AND J. E. HARRISON. **Experiments in cool storage of fruit.** *Jour. Dept. Agric. Victoria* 23: 678-681. 1925.—This is a report on the keeping qualities of pears, plums and grapes at various temperatures. A temperature of 32°F. is best for grapes.—*Wm. E. Lawrence.*

4986. BARRETT, O. W. **The food plants of Porto Rico.** *Jour. Dept. Agric. Porto Rico* 9: 61-208.—This work gives both common and scientific names, with descriptions and cross references, of 426 species of food plants known to occur on the Island. It includes not only the

important crop plants, but also those which are represented by a few specimens. The work includes about 225 fruits, 30 vegetables, 38 root crops, 23 seed crops and 21 salad plants.—*Mel. T. Cook.*

4987. BENTON, R. J. **Renovating and reworking orange trees.** Agric. Gaz. New South Wales 36: 899-903. 3 fig. 1925.

4988. CASTELLA, FRANCOIS DE. **Port.** Jour. Dept. Agric. Victoria 23: 577-593. 1925.—This is an account of the history and evolution of Port wine, the climatic and soil requirements, the varieties of grapes used, and the processes of manufacture, as found in Spain. No Port grapes are ever grown on granitic soils, but solely in Cambrian schist. Table grapes are grown on granitic soils. The variety of grapes and season are important factors in color. No living organisms are concerned in the maturing processes of Port.—*Wm. E. Lawrence.*

4989. CASTELLA, FRANCOIS DE. **Sultana drying by the cold dip process.** Jour. Dept. Agric. Victoria 23: 716-731. fig. 1-4. 1925.—This is a résumé of the experience of practical growers and of the available information on the subject. The cold dip is preferred to the hot caustic soda method.—*Wm. E. Lawrence.*

4990. CHITTENDEN, F. J. **Pollination in orchards.** Welsh Jour. Agric. 1: 161-165. 1925.—It is pointed out that cross-pollination is in nearly all cases necessary for the production of a full crop of apples, pears, plums and cherries. A few varieties of apple seem quite self-sterile, like Royal Jubilee; most, like Cox's Orange Pippin, are almost self-sterile; a few, like Duchess of Oldenburg and Rev. W. Wilks, are self-fertile. Insects, especially the hive and wild bees, are the pollinating agents. In no variety examined has the pollen proved to be wholly infertile, nor, except in a few plums and several cherries, has cross-incompatibility between varieties been discovered among English fruits. Among plums, Coe's Golden Drop, Jefferson and Coe's Violet are sterile to one another's pollen, as are President and Late Orange; among cherries numerous examples of mutual incompatibility as well as self-sterility have been found.—The article is a popular summary of the status of the question in England rather than an addition to existing knowledge.—*Author.*

4991. CORNE, F. E. **Ferns—facts and fancies about them—VI.** Amer. Fern Jour. 15: 80-86. 1925.—The writer discusses fern culture and the care of ferns in gardens and in the house.—*B. R. Walker.*

4992. COSTANTIN, J. **Deux stations expérimentales nouvelles de l'Argouane (Pleurotus Eryngii).** [Two new experimental stations for "argouane," *Pleurotus Eryngii*.] Compt. Rend. Acad. Sci. Paris 181: 447-449. 1925.—One of these stations is in the Ardennes at Guignecourt-sur-Vence; the other is at the forest of Fontainebleu. The conditions at the stations are compared as to suitability to the growth of this edible fungus. It is found that *Pleurotus* can be raised saprophytically on artificial media, but adult fructifications do not develop.—*C. H. Farr.*

4993. DALLIMORE, W. [Rev. of: BAILEY, L. H., editor. **The cultivated evergreens.** The Macmillan Co.: New York, 1923.] Kew Bull. 1924: 270-271. 1924.—This paper presents a general account of the contents of the book and its omissions.—*T. J. Fitzpatrick.*

4994. DARROW, GEORGE M. **Fruits in West Virginia, Kentucky and Tennessee.** U. S. Dept. Agric. Dept. Bull. 1189. 1-81. Fig. 1-34. 1923.—This is the 4th of a series of reports outlining and describing the pomological regions of the U. S. A. and presenting the results of a study of the behavior of fruit varieties in those regions. The area covered includes chiefly Tennessee, Kentucky and West Virginia; and the pomological regions defined, mapped, and described are (1) The East Tennessee Valley, (2) the Virginia Valley and Ridge, (3) the Cumberland Plateau, (4) the Allegheny Plateau, (5) the Interior low Plateau, and (6) the Gulf Coastal Plains regions. The more important fruit varieties grown in these regions are described and their faults and merits emphasized. Summaries are given of the fruit varieties recommended for planting and testing in commercial plantings, and for home use and local market in each region, as well as varieties whose faults suggest that they be discarded.—*Author.*

4995. HARRISON, J. E. **Cold storage of pears. Results of experiments.** Jour. Dept. Agric. Victoria 23: 603-607. 1925.—Though the proper conditions for the storage of apples and pears are well known, much of the loss in storage is due to unsuitable temperatures. This is

largely due to an inability to control temperatures in holds and large chambers. Emphasis is placed on the variation of temperatures in large rooms and the importance of storing different kinds and varieties of fruits according to slightly higher or cooler temperature requirements.—*Wm. E. Lawrence.*

4996. HARPISON, J. E. Cool storage of Washington Navel oranges. Jour. Dept. Agric. Victoria 23: 428-432. 1925.—These experiments show that the "process of sweating offers the best means to date of minimizing the outbreak of mould in cool storage." An average temperature of 34°F. is better than 32° or temperatures higher than 34° for prevention. The keeping qualities of fruit from different districts vary.—*Wm. E. Lawrence.*

4997. HARTWELL, B. L., AND F. K. CRANDALL. The substitution of stable manure by fertilizers, green manures and peat. II. Rhode Island Agric. Exp. Sta. Bull. 201. 1-16.—The 3-year rotation was (1) cabbages before beets; (2) tomatoes before spinach; (3) lettuce before celery; some modifications included green manures in place of beets, spinach and lettuce. Manure was applied only in the spring. Yields of the early crops were larger with fertilizer and 16 tons of manure than with 32 tons of manure alone. The fertilizer ratios suggested by the experiment are 6-10-2 for cabbages, 4-14-2 for lettuce and 4-10-2 for tomatoes. For the 2nd crops, without more manure, a 5-8-6 ratio sufficed for beets and spinach, and a 6-8-6 for celery. On the peat plat, which received the same amount of organic matter in peat as was contained in 16 tons of manure, the beets decreased 25%, the spinach 10%, and the celery 25%. A comparison of the best average yields from the green-manure modifications and from fertilizer alone, with those from 32 tons of stable manure only, shows that cabbages increased 30%; ripe tomatoes, except for the first pickings, decreased 20%; and celery decreased 24%.—*B. L. Hartwell.*

4998. HELMS, J. Gamle Taks i Danmark. [Old yew-trees in Denmark.] K. Vet. Landbohsk. Aarbog 1925: 186-247. 41 fig. Copenhagen, 1925.—Denmark is situated within the range of the yew-tree (*Taxus baccata*), but only in 1 locality, aside from parks and gardens, is the tree growing spontaneously. In this locality, close to Vejle in Jutland, it thrives, but far larger trees, up to 200 years old, are found in the parks.—*Ernst Gram.*

4999. KENNEDY, P. B., AND B. A. MADSON. The mat bean *Phaseolus aconitifolius*. California, Agric. Exp. Sta. Bull. 396. 1-33. 1925.—Consideration is given to the history, origin and general description of the plant, cultural methods involved in its growth, uses, composition, and seed production.—*A. R. C. Haas.*

5000. MOHAMED, ABBAS. Notes on new plants growing at the introduction Station at Gezira. Egyptian Hort. Rev. No. 66. Jan., 1926.—The following ornamentals are mentioned as worthy of propagation: *Hunnemannia fumariæefolia* from Mexico, an annual; *Convolvulus mauritanicus*, a prostrate herbaceous perennial; *Cassia artemisoides*, *C. cape laburnum*, *C. australis*, and *C. glauca*, all shrubs; several species of *Bauhinia*, both shrub and tree form, *Lonicera Maackii* var. *podocarpa*, *L. dorobrantiana* and *Pandorea Brycei*, climbers. This is from a serial article, to be continued.—*W. Carleton McQuisiton.*

5001. PAN, WEN LU. Report on the investigation of commerce in Sinkiang. Jour. Ministry of Agric. and Commerce Republic of China 11⁸: 1-9; 11⁹: 1-11. 1925.—The report, in general, relates to the fruit industry in Sinkiang which has been for centuries one of the most famous fruit producing places in the Orient. The great variety of fruits and the tremendous output cannot be paralleled by any other fruit producing region except California. The leading orchard crops are grape, almond, walnut, pear, apple, pomegranate, cherry, and date. There are 6 horticultural varieties of grape, including one seedless, the characteristics, distribution, and annual production of which are discussed. A good sized grape plant is estimated to yield 1,000 catties (1,300 pounds) of fruit. Russia and Turkey are the 2 outstanding markets for Sinkiang raisins. The other crops mentioned above are marketed chiefly in China proper.—*C. Y. Chiao.*

5002. PAYNE, I. W. Moving large trees. Amer. Forests and Forest Life 30: 526-530, 560. 11 fig. 1924.—This paper presents a somewhat detailed account of methods of transplanting large trees in order to secure immediate effect in landscaping.—*Chas. H. Otis.*

5003. PORTERFIELD, W. M. Shanghai trees. China Jour. Sci. and Arts 3⁴: 242. 1925.—Mention is made of a lecture on this subject before the China Society of Science and Arts.

The headings used were: (1) Decorative trees; (2) Shade trees; and (3) Economic trees.—*Albert N. Steward.*

5004. RAEBIGER, H. Das Pilzmerkblatt des Reichsgesundheitsamts, Ausgabe 1924. [The mushroom chart of the state Health Service (Saxony).] Zeitschr. Pilzkunde 5: 31-37. 1925.—Critical remarks on the illustrations and descriptions given in this chart are presented, together with various information on the edibility of mushrooms, their value as feed for farm animals, and their various applications in technology and industry.—*F. Weiss.*

5005. SCHOONOVER, W. R., AND R. W. HODGSON, in cooperation with F. D. YOUNG. Orchard heating in California. California Agric. Exp. Sta. Bull. 398. 1-69. 1925.—Frost protection is considered essential in the growing of subtropical fruits. Orchard heating is justified only when the average value of the crop saved is in excess of the total frost protection costs. Consideration is given to equipment and fuel required, methods of heating the orchard, lighting and care of heaters, temperatures and contributing conditions causing frost damage and costs of orchard heating.—*A. R. C. Haas.*

5006. SCHULZ, ROMAN. Über die Geniessbarkeit des Pfeffer-Milchlings. [The edibility of the peppery *Lactarius*.] Zeitschr. Pilzkunde 5: 7-8. 1925.—The edibility of *Lactarius piperatus* is defended, but it must be broiled or fried without preliminary boiling.—*F. Weiss.*

5007. WIGGANS, C. B. The influence of certain environmental and cultural conditions on fruit-bud formation of pear and apricot. Jour. Agric. Res. 31: 865-883. Pl. 1-6, fig. 1-3. 1925 [1926].—(1) Bartlett pear and Royal apricot fruit buds began to differentiate at approximately the same date under coastal-valley, interior-valley, and foothill conditions. The pear began differentiation the first week in July and the apricot a month later, during 1922.—(2) The high altitude of the foothills seemed to have a retarding influence on fruit-bud development until the middle of September, when development became more rapid.—(3) The humid coastal conditions apparently stimulated rapid development of pear buds after differentiation. This was not the case with apricots until October when development became extremely rapid and the buds went into the winter at a more advanced stage than was found under either interior-valley or foothill conditions.—(4) The dry, hot interior-valley conditions appeared to induce a steady, uniform development of both pear and apricot buds; by early winter, however, these had not reached the advanced stage of development attained by buds from coastal valley and foothills. (5) The inception of fruit bud differentiation seemingly was not influenced to any extent by either heavy or light dormant pruning. Light pruning perhaps induce a slightly more rapid development for 6-8 weeks following fruit-bud differentiation of the pear.—(6) Irrigation apparently had a retarding influence on fruit-bud differentiation and development.—(7) Environmental conditions during winter, as found in the principal fruit growing districts of California, seemed not to have any checking influence on fruit-bud development of the pear and apricot.—*Author.*

5008. WITT, W. Champignonzucht. [Mushroom culture.] Zeitschr. Pilzkunde 5: 44-50. 1925.—This is a popular account of mushroom culture, with emphasis on the commercial aspects. The German crop of cultivated mushrooms is now about 2 million pounds annually.—*F. Weiss.*

MORPHOLOGY AND ANATOMY OF VASCULAR PLANTS

ARTHUR J. EAMES, *Editor*

(See also in this issue Entries 4439, 4467, 4696, 4699, 4703, 4834, 4885, 4935, 5279, 5284, 5286¹ 5287, 5288, 5404, 5413, 5437, 5486, 5489, 5576, 5626)

5009. BONNE, G. Sur les faisceaux de rébroussement dans la coupe florale de certaines Rosacées. [The recurring bundles in the floral cup of certain Rosaceae.] Compt. Rend. Acad. Sci. Paris 181: 189-191, 4 fig. 1925.—The author revives the discussion of the axial versus the appendicular origin of inferior ovaries, and calls attention to Van Tieghem's receptacular conception of the floral cup of roses as supported by the disposition of the bundles of this organ, and to the rectification of Van Tieghem's description by Boutineau. The study, especially of exotic genera, has shown that the recurrent carpellary traces are not a charac-

teristic solely of roses. An analogous structure is found in 2 aberrant genera of the Prunoideae: *Prinsepia* and *Nuttallia*. Figures are given of the longitudinal section of the floral cup of *Rosa*, *Prinsepia*, *Nuttallia*, and *Sorbaria*. The occurrence of these recurrent traces is explained as due to the disappearance of inferior carpels during phylogeny.—*C. H. Farr.*

5010. BROUGH, P. *Studies in the Epacridaceae. i. The life-history of Styphelia longifolia* (R. Br.). *Proc. Linn. Soc. New South Wales* 49: 162-178. 1924.—An explanation of the structure and highly specialised mechanism of dehiscence of the anther is given. Megasporengesis is described, and the fact that the micropylar megaspore functions in place of the usual chalazal one, is demonstrated. It is also shown that all 3 non-functional megaspores persist in an active state until endosperm formation is almost completed. This significant phenomenon has not previously been recorded in the life-history of Angiosperms. The persistence of the non-functional megaspores evidently represents the retention of an ancestral condition, but the present day function is regarded as being haustorial.—(*From Australian Sci. Absts.*)

5011. BROYER, CH. *Ophrys apifera* et sa virescence. [Virescence in *Ophrys apifera*.] *Bull. Soc. Bot. France*, 72: 699-700. 1925.—A colony of *Ophrys apifera* shows in numerous cases a strongly marked virescence of the lip; this seems to be becoming more common.—*J. Beauverie (translated).*

5012. BROYER, CH. *Ophrys arachnites* et ses monstruosités. [Monstrosities in *Ophrys arachnites*.] *Bull. Soc. Bot. France*, 72: 593-594. 1925.—Some plants collected on *Rhus* (Seine-et-Oise) have all their flowers with a double lip surmounted by a single column; others show a triple column with a double lip.—*J. Beauverie (translated).*

5013. BUCHHOLZ, JOHN T. The embryogeny of *Cephalotaxus Fortunei*. *Bull. Torrey Bot. Club* 52: 311-323. *Fig. 1-2, pl. 10.* 1925.—In the proembryo the cells formed are confined to the lower portions of the long narrow archegonia, walls not appearing until 16 free nuclei have been formed. When 32 cells are formed, the embryo is organized into 4 groups of cells which may be more or less unevenly arranged in tiers. The terminal cells "do not form embryos but go to form the cap instead. The next group of proembryonic cells above the cap combine to form a single embryo. The primary suspensor is formed from a tier of cells above these, and becomes very long, while the uppermost tier, the rosette cells, are the only ones which retain fully their separate embryo-forming capacity, usually giving rise to several rosette embryos." In the later embryo the stem tip differentiates slowly. Embryos usually have 2 cotyledons. It is believed that evidence is added for the view that "cleavage polyembryony is a condition through which the Coniferales have passed in their evolution."—*P. A. Munz.*

5014. CHRYSLER, M. A. *Botrychium lanuginosum* and its relation to the problem of the fertile spike. *Bull. Torrey Bot. Club* 52: 127-131. *Pl. 4.* 1925.—The conclusion arrived at in a previous paper that the fertile spike in the Ophioglossaceae represents 2 fused pinnae, is sustained by new work on *Botrychium lanuginosum*. In this species the sporogenous portion occupies the position of the 2nd, 3rd, 4th, 5th or 6th leaflet. A study of the vascular supply leads to the conclusion that this fertile spike consists of 2 fused pinnae.—*P. A. Munz.*

5015. DAUPHINÉ, ANDRÉ. Démonstration expérimentale du rapport vasculaire entre la feuille et la racine. [Experimental demonstration of the vascular interrelationship between leaf and root.] *Compt. Rend. Acad. Sci. Paris* 181: 1159-1160. *1 fig.* 1925.—Chauveaud in 1921 was the first to establish that the production of new leaves is accompanied by a differentiation of new conductive elements in stem and root. It is now found that if the number of leaves of a lupine seedling is reduced by removal, there is a corresponding absence of certain more or less important vascular elements in the root.—*C. H. Farr.*

5016. GEORGESCU, CONST. C. Die experimentelle Erzielung von verbänderten Achselsprossen bei den forstlichen Keimlingen. [Experimental production of fasciated axillary shoots of forest tree seedlings.] *Forstwiss. Centralbl.* 47: 757-764. *3 fig.* 1925.—The experiments of other investigators with *Phaseola*, *Vicia*, etc., are cited. The author produced fasciated shoots on seedlings of *Quercus rubra* and *Q. pedunculata*. When the main shoot is cut off just above its point of attachment to the cotyledons, the axillary buds usually develop and occasionally produce fasciated shoots believed due to excess of food material dissolved by the action of enzymes in the fleshy cotyledons, that is, made available to those buds by removal

of the main shoot. It is shown that food stored in the cotyledons, not in the soil, must be the governing factor. Rarely, fasciated axillary shoots develop when the main shoot is not removed. The leaf arrangement on fasciated shoots is very irregular.—*W. N. Sparhawk.*

5017. GUILLAUMIN, A. *Notules tératologiques, IV.* Bull. Soc. Bot. France 72: 603-601. 1925.—The author makes note of proliferated roses in the variety Gaston Chandon, and of monstrous double dahlias.—*From abstract by H. des Gayets.*

5018. KILLIAN, CH. *Observations sur le développement postembryonnaire du Drosera rotundifolia L.* [Observations on the development of the seedling from the embryo of *Drosera rotundifolia*.] Compt. Rend. Acad. Sci. Paris 181: 1083-1085. Fig. 1-7. 1925.—The embryo produces 3 organs—cotyledons, hypocotyl and radicle. This growth is determined by 2 meristems. It is not typical in the hypocotyl which grows more rapidly than the radicle.—*C. H. Farr.*

5019. LAWSON, A. A. *The life-history of Pherosphaera.* Proc. Linn. Soc. New South Wales 48: 499-516. 1923.—This investigation of the life-history of *Pherosphaera* affords the first knowledge we have of the gametophytes and embryo of this very rare and interesting Australian genus of conifers. The inquiry has revealed several very interesting and important features of morphology which are quite new. In addition it has also become evident that the structures of the male and female gametophytes and the embryo show no features that justify us in classifying *Pherosphaera* among the Podocarpaceae. (*From Australian Sci. Abstrs.*)

5020. LEHMAN, S. G. *Two rare types of abnormality in cotton seeds.* Jour. Elisha Mitchell Sci. Soc. 41: 138-140. Pl. 7. 1925.—A case is reported in which the embryo occupied a position just the reverse of normal orientation, and it is suggested that the embryo may have arisen from an antipodal cell. In another there were 2 embryos in the seed, the larger completely enclosing the other between its cotyledons. It is thought that both embryos developed from cells within the embryo sac.—*W. C. Coker.*

5021. LEMESLE, ROBERT. *Contribution à l'étude structurale des Umbellifères xerophiles.* [Anatomy of xerophilous Umbelliferae.] (Thesis, Univ. Paris.) P. 1-140. Illus. Paris, 1925.—Umbelliferae growing in such countries as the Mediterranean region, the steppes, South Africa, Australia or Chili, where periods of drought are severely felt and light is most bright, all show in common in their stems an excessive differentiation of protective tissues, while the parenchyma develops active assimilating or secreting functions.—Having summarized the ecological conditions in the various countries where xerophilous Umbelliferae are found to grow, the author describes the anatomical structure of different xerophilous Umbelliferae, and concludes with a discussion of the ways in which these plants may be considered adapted to drought conditions in the various countries: Most commonly, of course, epidermal cells show very thick walls, in the Mediterranean region the epidermis often shows lignification, while among Umbelliferae of the Southern Hemisphere a layer may differentiate within the cortex to form suberized cells. The medullary cells do not disappear within the pith of xerophilous stems, but they often become woody. Secretory parenchyma is more strongly developed where xerophily is evident. The number and size of secretory canals are often exaggerated in the pericyclic tissues.—*J. Dufrenoy.*

5022. LITARDIÈRE, R. DE. *Note sur un Cytisus scoparius de la forêt de Compiègne.* [Note upon a *Cytisus scoparius* of the forest of Compiègne.] Bull. Soc. Bot. France 72: 543. 1925.—A plant is described with flowers of unusual color and size.—*From abstract by H. des Gayets.*

5023. MURRILL, W. A. *Note on abnormal fruiting in the cinnamon fern.* Amer. Fern Jour. 15: 66. 1925.—In Florida *Osmunda cinnamomea* was found with leaves bearing sporangia on the terminal leaflets.—*E. R. Walker.*

5024. NAEF, ADOLF. *Ueber systematische Morphologie und ihre Bedeutung für die Wissenschaft und Lehre vom Leben.* [Systematic morphology and its importance in science and the study of life.] Vierteljahrsschr. Naturf. Ges. Zürich 68: 387-397. 1923.—The author considers the present status of systematic morphology in relation to physiology, genetics, and the theory of descent.—*John H. Schaffner.*

5025. PASCHER, A. [Rev. of: FUJII, K. *Über die Entlassung der Sperma'ozoiden von Isoëtes.* (Discharge of the spermatozoa of *Isoëtes*.) Flora 118/119 (Goebel-Festschr.): 115-126.] Arch. Protistenk. 52: 377-378. 1925.

5026. PICKETT, F. L., AND MILDRED E. MANUEL. Development of prothallium and apogamous embryo in *Pellaea glabella* Mettenius. Bull. Torrey Bot. Club 52: 507-514. Fig. 1-32. 1925.—"The prothallia of *Pellaea glabella* have a normal development from the spore, and show the usual reactions to growth conditions." On the hundreds of prothallia studied no archegonia were found, although antheridia and sperms were observed. Apogamy occurred frequently, the embryos arising "through the activity of cell masses involving comparatively mature tissue of the prothallia."—P. A. Munz.

5027. PORTERFIELD, W. M. A freak bamboo, a case of heterocyclosis of the culm of *Phyllostachys pubescens* H. de L. China Jour. Sci. and Arts 3¹²: 654-658. 1 pl., 5 fig. 1925.—An account is given of the form and structure of a specimen of bamboo collected near Hangchow, Chekiang. The internodes are shortened on alternate sides, presenting a zig-zag appearance. The partitions are oblique, those of alternate nodes being parallel. Since this stem was an isolated one and others of the sort occur but rarely, it would appear to be in the category of stem fasciations or proliferations rather than a distinct variety or species. The Chinese refer to this bamboo as Lo Han Chu and split pieces of it have been seen in the usual images in mountain shrines.—Albert N. Steward.

5028. PORTERFIELD, W. M. The square bamboo, a preliminary study of *Phyllostachys quadrangularis*. China Jour. Sci. and Arts 3⁶: 333-336. 2 fig. 1925.—The history of square bamboo is reviewed and certain references to it in Chinese literature are cited. The plant is described and its peculiar habits of growth are discussed.—Albert N. Steward.

5029. PORTERFIELD, W. M. What is bamboo? China Jour. Sci. and Arts 3³: 153-158. 2 pl. 1925.—A lecture read before the China Society of Science and Arts, in which the general morphology and structure of bamboo is explained to support the contention: (1) "That bamboos are tree grasses, and as such are the oldest representatives of the grasses." (2) "The whole bamboo plant is not a single culm, but hundreds of culms which are or were once connected by an intricate system of jointed underground stems." A bibliography of 9 titles is given.—Albert N. Steward.

5030. RAYMOND-HAMET. Sur un type de formations cribro-vasculaires médullaires nouveau pour la famille des Crassulacées. [A new type of medullary fibro-vascular structure in the Crassulaceae.] Compt. Rend. Acad. Sci. Paris 181: 1163-1165. 1925.—*Thompsonella minutiflora* has supernumerary fibro-vascular structures different from those of *Echeveria gibbiflora* and *Greenovia terrae* previously described. The structure of the internodes of the peduncle is described in detail.—C. H. Farr.

5031. SOUÈGES, RENÉ. Développement de l'embryon chez le *Sherardia arvensis* L. [Development of the embryo in *Sherardia arvensis* L.] Bull. Soc. Bot. France 72: 546-565. Fig. 1-72. 1925.—A detailed description of embryo development is given, especially that of the early stages. The relation of the early segments to the parts of the mature embryo is traced. In all essential characters the embryo of *Sherardia arvensis* is like that of the Solanaceae.—From abstract by A. Tronchet.

5032. SOUÈGES, RENÉ. Embryogénie des Crassulacées. Développement de l'embryon chez le *Sedum acre* L. [Embryogeny of the Crassulaceae. Development of the embryo of *S. acre*.] Compt. Rend. Acad. Sci. Paris 181: 521-522. Fig. 1-22. 1925.—A new type of development of angiosperm embryo is found in this species. It is characterized by the differentiation of the basal cell into a large vesicular haustorium, by the disposition of the 4 elements of the tetrad through the division of the terminal cell after that of the internal cell, by the successive segmentation of the terminal cell identically with the apical cell of the embryo of Cruciferae, and by the individualization of the hypophysis giving rise to the initials of the cortex at the root tip.—C. H. Farr.

5033. SUMMERS, F. Research in textiles. [Rev. of: DEPARTMENT SCI. AND INDUST. RESEARCH. First report of the fabrics co-ordinating research committee. iv + 70 p. H. M. Stationery Office: London, 1925.] Nature 116: 952. 1925.

5034. TRONCHET, A. L'accélération vasculaire dans la schizocotylie. [The vascular acceleration in schizocotly.] Compt. Rend. Acad. Sci. Paris 181: 73-75. Fig. A-B. 1925.—Schizocotly is associated with a vascular acceleration which is very marked at the base of the cotyledon and the apex of the hypocotyl. A seedling of *Dimorphotheca pluvialis* is described with one cotyledon bifurcated and the other normal.—C. H. Farr.

5035. WELCH, M. B. Notes on the structure of wood. Tech. Mus. Sydney, Bull. 9. 1924.

5036. WILLIAMS, SAMUEL. Some points in the anatomy of *Dicksonia*. Proc. Roy. Soc. Edinburgh 45: 286-297. Pl. 1-3, fig. 1-4. 1925.—*Dicksonia antarctica*, a dendroid species 30-35 feet high, has a curiously corrugated stele surrounding a pith, 7.5 cm. in diameter, which is composed entirely of parenchyma except for a few irregularly disposed sclerotic strands. The leaf traces are of very short dictyostelic type and are broken in their peripheral region before their complete departure from the axial strand. At higher levels the petiolar strands form a horse-shoe curve with open end on adaxial side. *Dicksonia squarrosa*, a somewhat smaller species, has a similar stele. Here the petiolar stele is arranged in form of involuted horse-shoe of separate strands, each surrounded by sclerenchyma, and which at higher levels converge to form a continuous, much corrugated horse-shoe, in which protoxylem groups occupy the grooves. Large thin-walled cells are present on the adaxial side of the protoxylem groups. Small mucilage ducts are found in phloem, cortex, and pith of both species.—The corrugation of the stele in *Dicksonia* sp. is due to the oblique passage of the leaf traces through the cortex and is thus only indirectly a manifestation of the operation of the size factor, resulting in the maintenance of an adequate ratio between surface and bulk of such a large stele. The influence of the size factor results directly in the corrugation of the petiolar stele and is also shown in the detailed structure of the heterogeneous xylem where practically every tracheid comes into contact with one or more living parenchymatous cells. This raises the question as to whether homogeneity or heterogeneity of the xylem is a specific or generic character or whether it is not the result of the operation of the size factor. Observations on a number of species lead to the conclusion that wherever homogeneous xylem is present the mass is either small or arranged so that all tracheids are in contact with living tissue; and wherever the xylem mass is at all bulky it is heterogeneous, permitting an intermingling of tracheids and parenchyma. Exceptions are found in certain fossil ferns, for example, *Botryopteris*, *Asteropteris*, and fossil Osmundaceae; and in certain primitive living ferns.—Ray C. Friesner

MORPHOLOGY AND TAXONOMY OF ALGAE

WM. RANDOLPH TAYLOR, *Editor*

(See also in this issue Entries 4694, 4701, 4702, 4706, 4721, 4727, 4739, 4754, 4753, 4749, 5024, 5440, 5445, 5462, 5468, 5473, 5507, 5544, 5583)

5037. ANONYMOUS. [Rev. of JOHNSTONE, J., A. SCOTT, AND H. C. CHADWICK. The marine plankton with special reference to investigations made at Port Erin, Isle of Man, during 1907-1914: A handbook for students and amateur workers. xvi + 194 p. 20 pl. University Press: Liverpool; Hodder and Stoughton: London, 1924.] Nature 114: 497. 1925.

5038. ADOLPH, E. F. Some physiological distinctions between freshwater and marine organisms. Biol. Bull. 48: 327-335. 1925.—For *Spirogyra* it was found that with a variety of plasmolizing agents, if the toxicity concentration was almost exactly the lowest one which produced distinct permanent plasmolysis, by gradually increasing the concentration of the medium both toxicity and plasmolysis were prevented.—Wm. Randolph Taylor.

5039. AMOSSÉ, A. Contributions à la flore diatomique de Madagascar. Bull. Mus. Hist. Nat. Paris 31: 213-217. 1925.

5040. AMOSSÉ, A. Diatomées des oases du Kaouar, de Djado et d'Agram (Sahara oriental). Bull. Mus. Hist. Nat. Paris 31: 104-111. 1925.

5041. AREVALO, CELSO. Algunas consideraciones sobre la variacion temporal del plankton en aguas de Madrid. [Some considerations on the seasonal variation of plankton in waters of Madrid.] Bol. R. Soc. Española Hist. Nat. 23: 94-105. 1925.

5042. AREVALO, CELSO. El lago de Carucedo. [The lake of Carucedo.] R. Soc. Española Hist. Nat. Mem. 11^o: 305-330. 1923.

5043. AREVALO, CELSO. Larvas planktónicas de arquipteros de la laguna de Peñalara. [Primitive winged plankton larvae of the lake of Peñalara.] R. Soc. Española Hist. Nat. Tomo extraordinario pub. con motivo del 50. aniversario. 169-172. 1921.

5044. AREVALO, CELSO. Notas hidrobiologas. [Water biology notes.] Bol. R. Soc. Española Hist. Nat. 20: 163-168. 1920.

5045. AREVALO, CELSO. Sobre el concepto preciso de la palabra "Hidrobiología" en su sentido estricto. [The precise meaning of the word, "Hidrobiología," in its strict sense.] Bol. R. Soc. Española Hist. Nat. 21: 171-177. 1921.

5046. ARNÉ, P. Bouteille provenant de l'Atlantic Biological Station de St. Andrews, N. B., Canada, trouvée à Guéthary. [Bottle from St. Andrews found at Guéthary.] Bull. Sta. Biol. Arcachon 22: 73-74. 1925.—The author reports that on June 10, 1925, he found on the beach at Guéthary (Gulf of Gascogne) a bottle cast up by the sea. This bottle contained a post-card bearing the number 5805 and the following address: "Atlantic Biological Station, St. Andrews, N. B., Canada." The bottle had been set afloat by this station from Sable Island (off the coast of Nova Scotia) at about the same latitude as that of Guéthary. This experiment shows that algae living on the coasts of North America may easily be carried across the Atlantic, especially if they are provided with bladders as is the case for many of the Fucaeeae.—A. de Puymaly (translated by John M. Fogg, Jr.).

5047. BATES, G. F. A preliminary list of Perthshire diatoms. Trans. Perthshire. Soc. Nat. Sci. 8: 1-15. 1924.

5048. BORGE, O. Die von Dr. F. C. Hoehne während der Expedition Roosevelt-Rondon gesammelten Süßwasseralgen. [Fresh water algae collected by F. C. Hoehne during the Roosevelt-Rondon expedition.] Ark. Bot. 19¹⁷: 1-56. 6 pl., 3 fig. 1925.—The following are new: *Microcoleus brasiliensis*, *Calothrix scytonemicola* Tilden var. *brasiliensis*, *Bulbochaete doliiformis*, *Oedogonium Hoehnei*, *Spirogyra Hoehnei*, *Closterium subcostatum* Nordst. var. *dilatatum*, *C. perminutum*, *C. moniliferum* (Bory) Ehrenb. var. *recurvatum*, *Euastrum intermedium* Cleve var. *longicolle*, *E. informe*, *Cosmarium contractum* Kirchn. var. *rotundatum*, *C. difficile* Lütken. var. *dilatatum*, *Arthrodesmus maximus*, *Staurastrum ceratophorum* Nordst. var. *duplicatum*, *S. brasiliense* Nordst. var. *porrectum*, *S. obductum*, *S. tectum*, *S. Boergesenii* Rac. var. *elegans*, *S. pseudosebaldi* Wille var. *unguiculatum*, *S. Hoehnei*, *S. stelliferum*, *Onychonema laeve* Nordst. var. *hians* and *Hyalotheca undulata* Nordst. var. *ornata*.—An index of all species dealt with concludes the paper.—O. Heilborn.

5049. BØRGESSEN, F. Marine algæ from the Canary Islands. I. Chlorophyceæ. Kungl. Dansk. Videnskab. Selskab. Biol. Meddel. 5³: 1-123. 49 fig. 1925.—This paper gives a complete list of green algae from the Canary Islands, based for the most part on a collection made by the author during a visit to the Islands in 1920-1921. The list contains 82 species, the majority of which belong to the genera *Bryopsis*, *Caulerpa*, *Chaetomorpha*, *Cladophora*, *Codium*, *Enteromorpha* and *Valonia*. In *Cladophora* the following new species are described: *C. inclusa*, *C. Coodleoides*, and *C. cymopolæ*. Discussions on *Microdictyon*, including a critical review of Setchell's last paper and of the families in the Siphonocladiales, where the groups of Boodleaceae and Anadyomenaceae, have been given rank of families, are also found. In the family of Codiaceae a new genus, *Pseudochlorodesmis* is proposed in which the former *Bryopsis furcellata* Fanard is placed. A fairly large number of species are common to the West Indies and to the Mediterranean, thus giving support to Wegener's theory of the shifting continents.—C. A. Jørgensen.

5050. BRUTSCHY, A. Beobachtungen an lebenden und frisch konservierten Diatomeen. [Observations on living and freshly preserved diatoms.] Mikrokosmos 19: 9-12. 5 fig. 1925.

5051. CROW, W. B. Sporangia and the formation of colonies in Chlamydomonadales. Ann. Botany [London] 39: 653-655. 1925.

5052. CUNNINGHAM, BERT. The pure culture of diatoms. (From Proc. North Carolina Acad. Sci.) Jour. Elisha Mitchell Sci. Soc. 39: 10-11. 1923.—The author reports the continuation of his earlier experiments (see Bot. Abstracts 11, Entry 1611). Cultures from a single cell were obtained and grown in tubes, thus securing absolute purity of strain.—W. C. Coker.

5053. DELF, E. M. Spermatia of the Florideae. Rept. Proc. Imp. Bot. Conf., London, 1924: 332-337. 1925.

5054. DENIS, M. Revue des travaux parus sur les algues de 1910 à 1920. [Review of work on algae, 1910-1920.] Rev. Gén. Bot. 37: 462-480, 496-510, 523-538. 1925.

5055. ENTZ, G. Über Cysten und Encystierung der Süßwasser-Ceratien. [Cysts and encystment of fresh water Ceratium.] Arch. Protistenk. 51: 131-183. 50 fig. 1925.—The cysts

of the following are described: *Ceratium hirundinella* f. *typica*, *C. hirundinella* f. *reticulatum*, *C. cornutum*, *C. carolinianum* (*C. curvirostre*). Stages in development of the cysts are figured, and the cytoplasmic inclusions are described in detail. Occurrence of cysts in plankton of several localities is tabulated, and a conclusion is offered as to the optimum temperature (15°C.) for encystment. The nucleo-cytoplasmic ratio of the cysts is compared with that of the negative stages. It is concluded that for the different species and varieties of *Ceratium* examined, the form, size, and nucleo-cytoplasmic ratio are constant and characteristic for each.—*R. P. Hall*.

5056. FREMY, P. Algues aériennes et d'eau douce observées en été à Chausey. [Aerial and fresh water algae observed in summer at Chausey.] Bull. Soc. Linn. Normandie VII, 7: 179-181. 1925.

5057. FREMY, P. Note sur la flore des anciennes carrières de Fleury-sur-Orne. [Note on the flora of the ancient quarries of Fleury-sur-Orne.] Bull. Soc. Linn. Normandie VII, 7: 162-167. 1925.

5058. FREMY, P. Notes sur quelques Cyanophycées marines de Cherbourg. [Notes on some marine Cyanophyceae of Cherbourg.] Bull. Soc. Linn. Normandie VII, 7: 17-20. 1925.

5059. FREMY, P. Stations nouvelles de *Microcoleus tenerimus* Gom. et de *Hydrocoleum lyngbyaceum* Kutz. Bull. Soc. Linn. Normandie VII, 7: 181-185. 1925.

5060. GEITLER, L. Neue und wenig bekannte Cyanophyceae I. [New and little known Cyanophyceae.] Arch. Protistenk. 50: 89-112. 1924.

5061. HARTMANN, M. Über die Veränderung der Koloniebildung von *Eudorina elegans* und *Gonium pectorale* unter dem Einfluss äusserer Bedingungen. IV. Mitt. der Untersuchungen über die Morphologie und Physiologie der Formwechsels der Phytomonaden (Volvocales). [Variations in colony-formation by *E. elegans* and *G. pectorale* as influenced by external conditions.] Arch. Protistenk. 49: 375-395. Pl. 12-15, 4 fig. 1924.—The author outlines the normal development of *Eudorina elegans*, and then describes the experimental production of plate-like colonies when grown in Molisch's solution, 1st with artificial light, then in 0.05% solution, and in the 3rd case with ammonium chloride added. Plate-form *Eudorina* colonies become normal again if they are placed in Benecke's solution.—The normal development of *Gonium pectorale* is described. In experimental cultures of *Gonium* in Knopf's solution (0.01 to 0.2%) and in "Knopagar" (1 gm. agar in 100 cc. 0.1% Knop's solution), 1-celled forms and other abnormal types developed. In other experiments, giant forms appeared in 0.2% Knop's solution. On transfer of such giant forms to 0.05% Benecke's solution, spherical ("*Eudorina*") forms appeared.—*R. P. Hall*.

5062. HARTMANN, M. Untersuchungen über relative sexualität I: Versuch an *Ectocarpus siliculosus*. [Investigations on relative sexuality I: An experiment on *E. siliculosus*.] Biol. Zentralbl. 45: 449-467. 1925.

5063. HENCKEL, A. Die charakteristischen Hauptzüge des Phytoplanktons des Karameeres. [The characteristic features of the phytoplankton of "Karameeres."] Bull. Inst. Recherches Biol. et Sta. Biol. Univ. Perm. 3: 153-155. 1924.

5064. HENCKEL, A. Materialien zum Phytoplankton des Karameeres. [Constitution of the phytoplankton of "Karameeres."] Bull. Inst. Rech. Biol. Univ. Perm. 3, Suppl. 2, 60 p., 7 pl. 1925.

5065. HENCKEL, A., UND P. HENCKEL. Ueber eine neue Vermehrungsart bei Diatomeen. [A new method of reproduction in diatoms.] Bull. Inst. Recherches Biol. et Sta. Biol. Univ. Perm. 3: 143-148. 1924.

5066. HENCKEL, A., ET W. NOVICOW. Note préliminaire sur un cas de symbiose de l'algue marine *Ascopyllum* avec *Rivularia* sp. [Preliminary note on a case of symbiosis of the marine alga, *Ascopyllum*, with *Rivularia* sp.] Bull. Inst. Recherches Biol. et Sta. Biol. Univ. Perm. 1: 4. 1923.

5067. HOVASSE, R. *Zooxanthella* Chattoni (*Endodinium* Chattoni). Étude complémentaire. Bull. Biol. France et Belgique 58: 38-48. 1924.

5068. HUBER-PESTALOZZI, C. Zur morphologie und entwicklungsgeschichte von *Asterothrix* (*Cerasterias*) *raphidioides* (Reinsch Printz). [Morphology and life history of *A. raphidioides*.] Hedwegia 65: 169-178. 1925.

5069. HUSTEDT, FRIEDRICH. *Bacillariales aus Schlesien. (Bacillariales of Silesia).* Internat. Rev. Ges. Hydrobiol. u. Hydrograph. 13: 345-357. 1925.—A report is made on the distribution and abundance of 199 species of diatoms in eleven Silesian lakes.—*Lowell E. Noland.*
5070. IKARI, J. *On Chaetoceras Eibenii Grun.* Bot. Mag. Tokyo 39: 52-59. 1925.
5071. ISHIKAWA, M. *On the phylogeny of Rhodophyceae. (Japanese.)* Bot. Mag. Tokyo 38: (159)-(167). 1924.—Based on his cytological studies on Bangiales, including *Porphyra*, *Bangia*, *Porphyridium*, *Thorea*, and *Compsopogon*, the writer points out that the last 2 genera lack some of the general characteristics of Bangiales, namely, the less differentiated nucleus, stellate chromatophore provided with a pyrenoid at the center, and the lack of intercellular continuity of protoplasm. *Thorea* is considered to be closely allied to Helminthocladiaceae or Chaetangiaceae while *Compsopogon* should belong to Lemnaceae. Schizogoniales (including *Prasiola*), which according to the usual classification belongs to Chlorophyceae, shows many similarities to the Bangiales except that it lacks phycoerythrin and phycoeyanin. The marked similarities among Florideae, Bangiales and Cyanophyceae in connection with the pigments in the cell, nature of the nucleus, and some other characteristics have led the writer to the belief that Florideae must have descended from Cyanophyceae through Bangiales.—*T. Fukushi.*
5072. KARSTEN, GEORGE. *Zur Entwicklungsgeschichte der Diatomeen. [On the life history of diatoms.]* Internat. Rev. Ges. Hydrobiol. u. Hydrograph. 13: 326-333. 3 text figs. 1925.—Auxospore formation is described for the marine diatoms *Grammatophora marina* and *Triceratium (Amphitetras) antediluvianum*, with observations on microspore formation in the latter species.—*Lowell E. Noland.*
5073. KEELY, F. J. *Pleurosigma Boyerd, a new diatom from Florida.* Proc. Acad. Nat. Sci. Philadelphia 77: 31-32. 1 fig. 1925.—This new species was secured from fresh water at DeLeon Spring, Florida.—*Wm. Randolph Taylor.*
5074. KNIEP, H. *Ueber Fucus-bastarde. [Fucus hybrids.]* Flora 118/119: 331-338. 1925.
5075. KOLBE, R. W. *Ueber das Vorkommen von Salzwasserdiatomeen in Binnenlande. I, Coscinodiscus subtilis var. Rothii forma minor (Grun.) v. H. in Spree-Havel Gebiete. [Presence of salt water diatoms in the interior. I. C. subtilis var. Rothii f. minor in the Spree-Havel district.]* Ber. Deutsch. Bot. Gesell. 43: 80-86. 1925.
5076. KRENNER, J. A. *Ueber die Bewegung der Oscillarien. [Motility of Oscillarias.]* Arch. Protistenk. 51: 530-541. 1925.
5077. LEFEVRE, M. *Contribution à la flore des algues d'eaux douces du nord de la France. [Contribution to an algal flora of the north of France.]* Bull. Soc. Bot. France 72: 659-699. 2 fig. 1925.—This is a list of algae collected in the marshy district of Somme, between Amiens and Peronne. Two species are new for France, *Centonella Reicheltii* M. Voit and *Peridinium Westii* Lemm.; and for the flora of the region, 47 species and varieties. In this marshy calcareous district one finds but few desmids, while the diatoms are preponderant. The high mineral content (lime) of the water favors the diatoms.—*J. Beauveri (translated).*
5078. LEMOINE, MME. P. *Corallinacées du Maroc. [Corallinaceae of Morocco.]* Bull. Soc. Sci. Nat. Maroc. 4⁵⁻⁶: 113-133. Pl. 3-4. 6 fig. 1924.—In this note the author gives the result of a study of the Corallinaceae preserved in the Institut Scientifique Cherifien de Rabat, which contains the collections of Dollfus, Lionville, etc., and also a collection assembled by Mouret, preserved in the Museum d'Histoire Naturelle de Paris. While no new species are included, most of the localities are new. A general list of all the species reported for the Moroccan coast is given, grouped by localities, permitting an orientation of future investigations, and a tabular comparison of the Coralline flora of Morocco with that of neighboring areas.—*Author (translated).*
5079. LINDEMANN, E. *Peridineenbestimmung für Anfänger. [Peridinin determination for beginners.]* Mikros. Naturfreunde 3: 77-83. 3 fig. 1925.
5080. LINDEMANN, E. *Peridineen des Oberrheins und seiner Altwasser. [Peridinia of the upper Rhein.]* Bot. Archiv. 11: 474-481. 1925.
5081. MACKAY, H. H. *A quantitative study of the plankton of the shallow bays of Lake*

Nipigon. (Publ. Ontario Fish. Research Lab. 26.) Univ. Toronto Studies 1924: 169-222. Pl. 1-2. 1924.—With the exception of the Entomostraca the plankton is rich, the quantitative balance being on the side of the Rotifera, Protozoa and the phytoplankton. A mixture of higher aquatic vegetation seems to favor a richer phytoplankton. The maximum plankton production ranges from the middle of July to the middle of August for the period of the observations. The forms observed are listed to genus only.—*Wm. Randolph Taylor*.

5082. MARCHEWIANKA, MARJA. Przyczynek do morfologii, *Ceramium diaphanum* Z. Gdyni. [Morphology of *C. diaphanum*.] Kosmos 49: 843-851. Pl. 1. 1924.—The author reports and describes the formation of monospores, bispores, tetraspores and polyspores in *Ceramium diaphanum*. The monospores and bispores show a great range of variation.—*P. D. Strausbaugh*.

5083. MARCHEWIANKA, M. Z flory glonów polskiego Bałtyku. [Algae of the Polish Baltic Sea.] Sprawozdania Komisji Fizjograficznej. 58-59: 33-45. 1925.—In this paper are listed algae collected by the author on the Polish sea coast of the Gulf of Danzig. For some species are given notes on their anatomy, morphology and ecology. About 18 species are found, which are not mentioned by Lakowitz in "Algenflora der Danziger Bucht" (Danzig, 1907, 141 p.).—*Hanna Czechtz*.

5084. MARSHALL, S. M. On *Proerythrospira vigilans* n. sp. Quart. Jour. Micros. Sci. 69: 177-184. 1925.

5085. MARSHALL, SHEINA M. A survey of Clyde plankton. Proc. Roy. Soc. Edinburgh. 45: 117-141. 1925.—The paper gives a brief description of methods used in collecting plankton during 1923 and 1924. As a result of collections made almost daily during 1923 the relative abundance of diatoms and other plankton organisms has been determined for each month. A systematic list of genera and species of plankton forms is also given. The general course of events was the same for both years and is similar to that at other marine stations. "There is a winter minimum followed in the early spring by a large increase in the number of diatoms and of larval forms (for example, copepod, cirripede, and molluscan). This is followed in May and June by a period poor in diatoms but very rich in crustacean life. . . . July, August, and September are the months richest in variety during the year—diatoms are abundant, peridinians reach their maximum, larvae of all kinds are numerous, as are also some of the larger metazoa. . . . The autumnal diatom maximum is in August or September, and the number and variety of planktonic organisms thereafter decrease."—*C. Mervin Palmer*.

5086. MESLIN, R. Sur quelques algues marines observées à Countainville (Manche). [Some marine algae observed at Countainville (Manche).] Bull. Soc. Linn. Normandie 7: 163-170. 1925.

5087. MOLISCH, H. Botanische Beobachtungen in Japan. *Mycoides parasitica* Cunn. eine parasitische und *Phycopeltis epiphyton* Mill., eine epiphytische Alge in Japan. [Mycoides parasitica, a parasitic, and Phycopeltis epiphyton, an epiphytic alga in Japan.] Sci. Rept. Tohoku Imp. Univ. IV, 12: 111-118. 1925.

5088. NAUMANN, EINAR. Notizen zur Biologie der Süßwasseralgen. III. [Notes on the biology of fresh water algae.] Ark. Bot. 1914: 1-7. 2 pl. 1925.—The author describes a formation of "neuston" by *Euglena flava* Dang. found in some ponds in June 1923. The development of this (green) *Euglena-neuston* was probably caused by burning of the grass vegetation in the ponds in spring, by the decay of pollen of fir-trees on the surface of the water and by exceptionally low water level.—*O. Heilborn*.

5089. NAUMANN, EINAR. Notizen zur Systematik der Süßwasseralgen. X. [Taxonomic notes on fresh water algae. X.] Ark. Bot. 1915: 1-7. 1 pl., 3 fig. 1925.—*Nostoc elgonense* from the crater lake on Mount Elgon (Kenya Colony) is described as new. It comes near to *N. pruniforme* Ag. and forms small colonies 5-25 mm. in diameter. Rather conspicuous annual rings were found in the colonies.—*O. Heilborn*.

5090. NAUMANN, E. Ueber eine planktische Modification von *Ophrydium versatile* Ehrb. [A plankton modification of *O. versatile*.] Arch. Hydrobiol. 15: 494-496. 1925.

5091. NAUMANN, EINAR. Untersuchungen über einige sub- und elittorale Algenassoziationen unserer Seen. [On some sub- and elittoral algal associations in Swedish lakes.]

Ark. Bot. 19¹⁶: 1-30. 4 pl. 1925.—The work describes some associations of algae that form colonies lying free on the substratum. The species found in these epiphythemic associations belong to the genera *Cladophora* (*Aegagropila*), *Aphanocapsa*, *Aphanothece*, *Chroococcus*, *Haplosiphon*, *Nostoc*, *Scytonema*, *Stigonema* and *Tolypothrix*. An animal genus (*Ophrydium*) also takes part in the formation of these associations. The taxonomy and morphology of some species of the above genera of Schizophyceae are dealt with in detail. These species generally occur in pure associations. A detailed description of the latter is given under 4 headings: the *Aegagropila*-, Schizophycean-, *Aegagropiloide* Schizophycean- and *Olpidium versatile*-associations. Relations between the epiphythemic formation and other plant formations of the lakes are briefly discussed, as well as the importance of the former for the formation of deposits on the bottom of the lakes and the precipitation of Ca and Fe.—O. Heilborn.

5092. NIEMANN, G. Über Potamoplankton im allgemeinen, und über das Phytoplankton der Elbe bei Magdeburg. [River plankton in general, and the phytoplankton of the Elbe at Magdeburg.] Mikros. f. Naturfreunde 3: 71-77, 276-282. 1925.

5093. OEHLER, R. Gereinigte Zucht von freilebenden Amöben, Flagellaten und Ciliaten. [Pure cultures of free-living amoebae, flagellates and ciliates.] Arch. Protistenk. 49: 287-296. 1924.—The author reviews some of his own methods and those of other investigators in growing *Euglena*, *Astasia*, *Chlorogonium*, *Paramecium*, *Colpidium*, *Colpoda*, *Bodo*, and *Prowazekia* in pure cultures. He distinguishes 3 methods: mechanical, physico-chemical and biological. (1) involves washing, centrifuging and transferring the organisms to suitable media. In (2) the encysted organisms may be washed in dilute NaOH to eliminate bacteria and unencysted organisms, or the cysts may be kept at abnormally high temperatures to kill yeasts; (3) includes the overgrowth of one bacterial species by another; electrical washing in a U-tube; the lifting tube of Ogata; and culture on agar plates. In electrical washing, the organisms (ciliates) are placed in a U-tube through which a current is passed; the organisms go to the cathode. In the lifting tube method, the organisms are allowed to rise to the top of a slender glass tube inserted in the culture.—The bacterial diet of several ciliates is also discussed.—R. P. Hall.

5094. OKAMURA, K. On the culture of *Gracilaria confervoides*. Jour. Imp. Fisheries Inst. 21: 10. 1925.

5095. OYE, P. VAN. Flagellates du Congo Belge. [Flagellates of the Belgian Congo.] Bull. Soc. Roy. Bot. Belgique 58: 11-19. 1925.—This list comprises 36 species with plates and descriptions of the following new species: *Euglena Detonii*, *Paranema glabra*, and *Rhacomonas lacustris*.—E. DeWildeman (translated).

5096. PARTHASARATHY-ITYENGAR, M. O. Note on two new species of *Botrydium* from India. Jour. Indian Bot. Soc. 4: 193-201. 1925.—*Botrydium tuberosum* and *B. divisum* n. spp. are described.—Wm. Randolph Taylor.

5097. PASCHER, A. Neue oder wenig bekannte Protisten. XV. Neue oder wenig bekannte Flagellaten. XIII. [New or little known flagellates. XIII.] Arch. Protistenk. 50: 486-510. 17 fig. 1925.—The following flagellates are described and figured, and references are given to original descriptions: *Dimorpha tetramastix*; *Dimorpha monomastix*; *Ochromonas aspera*; *Chromulina cylindracea* n. comb. Pascher; *Chromulina pyriformis*; *Chromulina cuneata*; *Scintilla chlorina*; *Scintilla splendida*; *Mallomonas splendens*; *Mallomonas australica*; *Cryptomonas ampulla*; *Cryptomonas maxima*; *Chroomonas gemma* n. comb. Pascher; *Chroomonas oblonga*; n. comb. Pascher; *Chroomonas caudata*; *Cryptoglena australis*; *Cryptoglena phacoidea*; *Colacium elongatum*; *Euglena guttula*; *Euglena vivida*; *Euglena pusilla*; *Phacus inflatus*; *Phacus tismorensis*; *Lepocinclis cymbiformis*; *Lepocinclis capitata*; *Lepocinclis costata*; *Lepocinclis paxilliformis*; *Lepocinclis rugulosa*; *Trachelomonas ovalis*; *Trachelomonas coronata*; *Trachelomonas splendida*; *Trachelomonas bacillifera*; *Trachelomonas paucispinosa*; *Trachelomonas Giardiana*; *Trachelomonas hesperia*; *Trachelomonas cuneata*; *Trachelomonas rotundata*; *Trachelomonas lanceolata*; *Trachelomonas spiralis*; *Menoidium inflatum*; *Menoidium acutissimum*; *Menoidium pseudomermis* n. comb. Pascher; *Menoidium gracile*; *Sphenomonas australis*; *Sphenomonas triquetra*; *Sphenomonas excavata*; *Sphenomonas spiralis*; *Sphenomonas mirabilis*; *Peranema cuneatum*; *Peranema asperum*; *Notosolenus pentagonus*; *Anisonema hexagonum*.—R. P. Hall.

5098. PASCHER, A. [Rev. of: MOLISCH, H. *Mycoidea parasitica* Cunningham, eine

parasitische, und Phycopeltis epiphyton, eine epiphyll Alge in Japan. (M. parasitica, a parasitic, and P. epiphyton, an epiphytic alga of Japan.) Bot. Beobacht. Japan. IV. Sci. Rep. Tokoku Univ. Ser. IV. 1: 111.] Arch. Protistenk. 52: 186-187. 1925.

5099. PAYNE, F. W. Notes on diatoms. No. 3. Jour. Bot. 63: 256-262. 1925.

5100. PFEIFFER, HERMANN. Die Methoden zur Erzielung von Fortpflanzungszuständen bei Algen. [Methods for investigating reproduction conditions in algae.] Mikrokosmos 16: 219-221. 1923.

5101. PRÄT, S. Beitrag zur Kenntnis der Organization der Cyanophyceen. [Contribution to the knowledge of the organization of the Cyanophyceae.] Arch. Protistenk. 52: 142-165. 1925.

5102. PRINGSHEIM, E. G. [Rev. of: SCHRÖBER, E. Zur Kenntnis der Physiologie und Sexualität höherer Volvocales. (Physiology and sexuality of the higher Volvocales.) Zeitschr. Bot. 17: 337. 1925.] Arch. Protistenk. 52: 373-374. 1925.

5103. PRINGSHEIM, E. G. [Rev. of: USPENSKI, E. E., UND USPENSKAJA, W. J. Rein Kultur und ungeschlechtliche Fortpflanzung des Volvox minor und Volvox globator in einer synthetischen Nährlösung. (Pure culture and asexual reproduction of V. minor and V. globator in a synthetic culture medium.) Zeitschr. Bot. 17: 273. 1925.] Arch. Protistenk. 52: 372-373. 1925.

5104. RAPHELIS, A. Variation du Spirogyra orbicularis Kuetzing. [Variation of Spirogyra orbicularis. Ann. Soc. Linn. Lyon. 69: 184-187. 2 fig. 1923.—This deals with an interesting collection of *Spirogyra orbicularis* collected at Cannes in August, 1902, in the fields of Saint-Cassien, in large dark masses in irrigation ditches, fruiting luxuriantly, the zygospores attaining the dimensions of 170μ by 120μ , being somewhat larger than indicated by Petit. This plant appeared again in 1921, with the same characteristics. The territory in which it grows has changed but little during the cycle. It is described as new under the name *S. orbicularis* (Hass.) Kuetzing var. *macrocarpa* n. var.—Author (translated).

5105. REGEL, K. Über die zoosporenbildung bei Ulothrix. [Zoospore formation in Ulothrix.] Mikrokosmos 17: 1-2. 1924.

5106. RYPOWA, H. Merismopedia subgenus Pseudoholopedia gigas nov. subgen., nov. sp. Acta Soc. Bot. Poloniae 3: 42-48. 1 fig. 1925.—This new species of Cyanophyceae has been found in the saline lake, Budachi, near the Black Sea, in Rumania. Its diagnosis is given in Latin. The author proposes a new classification of the section Gleococceae planimetreae Elenk.—Hanna Czezcoti.

5107. SAUVAGEAU, C. À propos des Cystoseira de Banyuls et de Guéthary. Supplément. [The Cystoseiras of Banyuls and Guéthary.] Bull. Sta. Biol. Arcachon 17: 5-52. 1915-1920.—In his memoir on the Cystoseiras of the Atlantic and the Mediterranean, published in 1912, the author mentioned the interest attaching to a better knowledge of the species of the Straits of Gibraltar and the eastern Mediterranean in order to appreciate the modifications exhibited by this genus. With this view he went in 1913 to Malaga and explored Algeciras, Ceuta and Tangier. His observations were ready in 1914 but, due to the war, were not published until 1920. This memoir contains also information supplied by specimens named by J. Agardh or by Piccone. The localities explored are described in a 14-page introduction. The species concerned are arranged as in the fundamental work of 1912. Additional data are furnished for the following: *Cystoseira fibrosa*, *C. barbata*, *C. ericoides*, *C. selaginoides*, *C. spinosa*, *C. squarrosa*, *C. platyclada*, *C. granulata*, *C. concatenata*, *C. Abiesmarina*, *C. Sonderi*, *C. corniculata*, *C. amentacea* Bory non al., *C. stricta*, *C. balearica*, *C. crinita*, *C. sp.* (*C. crinita* Farlow in herb.), *C. Myrica*, *C. canariensis*, *C. pumila*, *C. discors* C. Agardh emend., *C. abrotanifolia*, *C. selaginoides* var. *gibraltaria* n. var., and *C. tingitana* n. sp. are described.—A. de Puymaly (translated by John M. Fogg., Jr.).

5108. SAUVAGEAU, C. À propos de quelques Fucus du bassin d'Arcachon. [Some Fuci from Arcachon.] Bull. Sta. Biol. Arcachon 20: 19-136. 24 fig. 1923.—This memoir (continuation, Ibid., 1908) comprises 4 chapters. (1) Bornet, from examination of specimens of *Fucus platycarpus* Thuret collected at Morocco by Schousboe, had concluded that the species becomes smaller towards the south, but the author, collecting on the rocks near Tangier, found it as well developed as in the most favorable situations on the French coast. Schous-

boe's material was probably found on the beach as drift. Moreover, at Cadiz, Algeciras and Centa. *F. platycarpus* is found as a depauperate form where there can be no correlation with latitude. (2) A study is made of *F. dichotomus*, a new species discovered in 1908 on the oyster-beds in the basin of Arcachon, where it occurs with *F. platycarpus* and *F. vesciculosus*. The author has since been able to observe it at different seasons and he describes its appearance at various stages of its development. It fruits in summer. To this species the author refers var. *arcassonnensis* Sauv., which he had attributed in 1908 to *F. lutarius* Kütz.—(3) The author studied *F. lutarius* from the type locality (Isles of Chausey) to compare with that found at Arcachon. This species multiplies by means of adventitious growths which replace the receptacles, usually lacking. Some receptacle-bearing plants, however, are found in the Arcachon basin in spring. These are entirely female; the oogonia do not achieve maturity and their contents, usually undivided and multinucleate, seem incapable of germination. At Chausey the plant is always sterile. The author discusses the affinities of this species, gives it a new diagnosis, and advances the idea that this may be considered a provisional species, representing an adaptation to a mud environment.—(4) The author examines the contention of Stomps that *F. vesciculosus*, *F. platycarpus* and *F. ceranoides* are all varieties of a single species and points out that the dioecism of *F. vesciculosus* and the hermaphroditism of *F. platycarpus* are constant characters, his observations confirming those of Thuret. Also, the presence of true bladders seems to constitute a good specific character. Specimens of *F. vesciculosus* provided with marginal receptacles the author regards as hybrids resulting from a cross with *F. platycarpus*. He noted in 1909 a hybrid of *F. serratus* and *F. vesciculosus* which had receptacles of the *serratus* type, while *serratus* fronds bearing *vesciculosus* receptacles have never been observed. *F. axillaris* J. Agardh is described and figured from specimens in the Agardh herbarium and from material cast up in the Bay of Cadiz. This species is compared with *F. vesciculosus*; its characters are regarded as unstable and its delimitation difficult to trace. A detailed study is given of the *F. vesciculosus* of Cape Ferret (Arcachon basin), showing the range of variation exhibited by individuals subjected to a uniform environment.—*A. de Puymaly (translated by John M. Fogg, Jr.)*.

5109. SAUVAGEAU, C. Remarques sur la gélose et sur diverses algues qui en produisent. [Remarks on agar and on various algae producing it.] Bull. Sci. Pharm. 29: 637-640. 1922.

5110. SAUVAGEAU, C. Sur la gélose de quelques algues floridées. [Gelatin in some red algae.] Bull. Sta. Biol. Arcachon 18: 5-112. 1921.—The word, gelatin, is used here in the broad sense to designate the mucilaginous substance obtained from algae baked in an autoclave for $\frac{1}{2}$ hour at 120°. Species which thus furnish gelatin fall into 3 types: (1) The *Gelidium* type, of which the concentrate, although weak, agglutinates upon cooling; some of the cell walls contain amyloid which stains with potassium iodide-iodine; (2) cells of the *Chondrus* type, the extract of which agglutinates only when very concentrated or under the action of an electrolyte; the walls are not stained by iodide-iodine; (3) cells of the *Polyides* type, in which the agglutinating action is intermediate between the 2 preceding; aluminium sulphate has a strong coagulating effect and the iodide-iodine does not stain the cell walls, which are permeable to starch paste. The gelatinous properties of the species of *Gelidium* from the region studied equal those of the forms which the Japanese use in the preparation of agar-agar, but the plants are less abundant. *Chondrus crispus* and *Gigartina mamillata* are chiefly collected in France, but *G. acicularis*, *G. pistillata*, *Gymnogongrus patens*, *G. norvegicus* and *Polyides* may be used. The large species of *Gelidium* and *Chondrus*, reported as common for the Cape of Good Hope, Australia and California, should prove valuable sources of gelatin. The artificial bleaching to which the algae are submitted in commercial preparation, is believed harmful and not essential for industrial requirements. A careful cleaning to remove epiphytes is suggested as a substitute. Amyloid, formerly thought of as restricted to *Laurencia pinnatifida* and *Gracilariia* spp., is found to be much more widely distributed throughout the Florideae; it occurs regularly in species of the *Gelidium* type. Its presence is independent of the cellulose nature of the cell walls, since *Porphyra*, which contains no cellulose, shows the amyloid reaction. In the algae, a lesion produces a rapid appearance of this substance.—*A. de Puymaly (translated by John M. Fogg, Jr.)*.

5111. SAUVAGEAU, C. Sur quelques algues Floridées renfermant de l'iode libre. [Cer-

tain Florideae forming free iodine.] Bull. Sta. Biol. Arcachon 22: 5-45. 2 fig. 1925.—The presence of free iodine announced by Golenkin for *Bonnemaisonia asparagoides* has seemed so extraordinary that the authors of works which report his observation (Oltmanns, Czapeck, Molisch), and even Kylin who studied the same plant from this point of view, admit that it concerns rather a very unstable iodine compound; Kylin has moreover been led to the same conclusion for *Trailiella intricata*, which, with the preceding form are the only 2 iodine-containing Florideae known. The existence of free iodine, then, in algae is unexpected, but not incompatible, as had formerly been held. In *Asparagopsis armata*, an Australasian species, certain cells exhibit a brown globule, finely granular, contained in a colorless vacuole. The author calls this vacuole and its iodine-containing globule an "Ioduque." Ioduques may exist in all the superficial cells of the plant; they are especially plentiful in the upper part of the branches. *Falkenbergia Doubletii*, a small epiphyte is described and figured. In it an ioduque is found in each pericentral cell except that which occupies the summit of the angle of bifurcation of the branches. In *Bonnemaisonia asparagoides* the author has seen the iodine-containing cells, noted by Golenkin and studied by Kylin, and concludes that these organs are strictly comparable to the ioduques of the 2 preceding species. In these 3 Florideae the presence of free iodine is shown by the starch reaction, the dissolving action of chloroform, and by its action with cresyl-blue in forming fine acicular crystals. Iodine in mineral form exists equally in these plants and when they are grown in aquaria the amount of free iodine diminishes, while that of combined iodine increases. The iodine-containing Florideae form a group recently introduced into Europe, and which, in addition to their faculty for extracting iodine, are remarkable for the absence or rarity of sexual reproductive organs, with the result that vegetative multiplication by fragmentation is customary.—*A. de Puymary (translated by J. M. Fogg, Jr.)*.

5112. SAUVAGEAU, C. Sur une Floridée (*Polysiphonia Doubletii* mscr.) referment de l'iode à l'état libre. [A red alga, *Polysiphonia Doubletii* n. sp., containing iodine in the free state.] Compt. Rend. Acad. Sci. Paris 181: 293-295. 1925.—This alga was collected at Guethary and at Cherbourg, and although sterile it is given a new specific name, in honor of Mlle. Doublet. Each pericentral cell contains an ioduque, an intracellular organ, containing iodine in the free state, and described in a previous communication as occurring in *Asparagopsis*. The appearance of this structure and its reaction to dyes is described in detail.—*C. H. Farr*.

5113. SAVEL'EVA-DOGLOVA, A. Materialien zur Kenntnis der Bacillariaceenflora des Basins des flusses Oka in Murmongebietes. [Bacillariaceae flora of the basin of the Oka River in the Murmon district.] Arbeit. Biol. Oka Station. 3: 28-48. 1925.

5114. SCHEFFELT, E. Das plankton des Boden Sees mit Berücksichtigung der übrigen sudeutschen Seen. [The plankton of Boden See, with consideration of other South German lakes.] Mikrokosmos 18: 97-101. 1925.

5115. SCHURHOFF, P. N. Die Kernteilung der Diatomeen und Conjugaten. [Nuclear division in the diatoms and conjugates.] Mikrokosmos 16: 8-11. 1922-23.

5116. SKUJA, H. Bemerkungen über die Süßwassergattung *Lithoderma* Aresch. in Lettland. [Observations on the fresh water genus, *Lithoderma* in Latvia.] Hedwigia 65: 331-340. 1925.

5117. STEINECKE, FR. Die Serodiagnostik als Hilfsmittel botanischer Verwandtschaftsforschung. [Serology as an aid to the investigation of plant relationships.] Die Naturforscher 2: 1-5. 1925.

5118. TROITZKAJA, O. V. Zur Morphologie und Entwicklungsgeschichte von *Uroglenopsis americana* (Calkins) Lemmerm. [The morphology and life-cycle of *U. americana*.] Arch. Protistenk. 49: 260-277. 1 fig. 1924.—The author reviews the earlier descriptions of the species, and concludes from his own observations that the form of the organisms and the colonies is extremely variable. In young colonies, the cells are narrow; in later stages, egg-shaped; in mature colonies, elliptical or rounded in outline. Morphology and dimensions of the different types of cells and colonies are given, and figures are included. The paper also contains observations on staining reactions, effects of chemicals on the colonies, and the division of the cells.—*R. P. Hall*.

5119. VALLENTIN, E. F. Fresh-water algae of the west Falklands. Kew Bull. 1924: 283-287. 1924.—A preliminary report is given on a collection made in 1911, as an annotated list of 52 species, the results of determinations made by William West and Nellie Carter.—*T. J. Fitzpatrick.*

5120. WEBER, F. Krampf-plasmolyse bei Spirogyra. [Spasmodic plasmolysis in Spirogyra.] Archiv. Ges. Physiol. 206: 629-634. 1924.

5121. WOŁOSZYŃSKA, J. Przyczynek do znajomości polskich brzoźnic słodkowodnych. [Contribution to the knowledge of Polish freshwater Dinoflagellatae.] (German summary.) Acta Soc. Bot. Poloniae. 3¹: 49-64. 7 fig. 1925.—The localities in Poland are given for 10 species of Dinoflagellatae, which are divided into 2 groups which are described: (1) The winter forms, as *Gymnodinium tenuissimum*, *G. hiemale*, *G. carinatum* var. *hiemale*, *G. polonicum*, *G. undulatum*, *G. wigrense*, *G. helveticum*; and (2) the perennial forms (with a maximum development during winter), as *Peridinium aciculiferum*, *P. Marssoni*, *P. Lonnickii*. *Gymnodinium undulatum* n. sp. and *G. wigrense* n. sp. are described. Detailed description and figures are given of *Hemidinium nasutum* Stein, found in the lakes of East Carpathians. The structure of its integument shows that the genus *Hemidinium* is to be joined to Peridiniaceae rather than to Gymnodiniaceae.—*Hanna Czechtz.*

5122. ZACHAROW, N. D., A. HENCKEL, UND P. HENCKEL. Beobachtungen über den Einfluss einiger äusseren Umstanden auf Cladophora glomerata. [Observations on the influence of some external conditions on *C. glomerata*.] Bull. Inst. Recherches Biol. et Sta. Biol. Univ. Perm. 2: 348-353. 1924.

MORPHOLOGY AND TAXONOMY OF BRYOPHYTES

ALEXANDER W. EVANS, *Editor*

(See also in this issue Entries 4697, 4698, 4758, 5024, 5486, 5487, 5544)

5123. CASTLE, HEMPSTEAD. A revision of the species of *Radula* of the United States and Canada. Bull. Torrey Bot. Club 52: 409-445. Fig. 1-11. 1925.—The author describes the generic characters of *Radula* and gives a key for the species of the U. S. A. and Canada. Eleven species are recognized, as follows: *R. andicola* Steph., *R. australis* Aust., *R. Bolanderi* Gottsche, *R. caloosiensis* Aust., *R. complanata* (L.) Dumort., *R. flaccida* Lindenb. & Gottsche, *R. Langloisii* Castle (proposed as new), *R. obconica* Sulliv., *R. polyclada* Evans, *R. Sullivantii* Aust., and *R. tenax* Lindb., *R. epiphylla* Mitt. is reduced to synonymy under *R. flaccida*, *R. Hallii* Aust. under *R. complanata*, and *R. Lescurii* Aust. under *R. andicola*. Each species is described and compared with its allies, and full citations of specimens are included, except in the case of the common *R. complanata*. The descriptions include, wherever possible, characters drawn from the values of the capsule, and the figures show both gametophytic and sporophytic features.—*A. W. Evans.*

5124. CORNET, A. Note sur une mousse nouvelle pour la flore belge. [A moss new to the Belgian flora.] Bull. Soc. Roy. Bot. Belgique 58: 27. 1925.—The discovery of *Cynodontium gracilescens* Schimp. at Rondehay, Province of Liège, Belgium, is reported.—*É. De Wildeman* (translated).

5125. DAVY DE VIRVILLE, AD. Action de l'état hygrométrique et de la submersion sur la forme et la structure des mousses. [The effect of atmospheric humidity and submersion on the form and structure of mosses.] Compt. Rend. Acad. Sci. Paris 181: 192-194. 1925.—The author brings out the fact that the differences between the various forms of a single species of moss produced under different environmental conditions, may be greater than those generally recognized as specific. This supports the contention that the effect of the milieu is an important factor in the formation and evolution of species. It had previously been shown that variations in light and temperature had a marked effect on the form of a species. It is now shown that variations in the humidity of the air and submersion in water are likewise effective. The genera *Aulacomnium*, *Leucobryum*, *Mnium*, *Polytrichum*, *Rhacomitrium*, and *Phyidium* were studied as to the effects of different degrees of humidity; the genera *Aulacomnium*, *Hypnum*, and *Mnium*, as to the effects of submersion.—*C. H. Farr.*

5126. DIXON, H. N. The collection of bryophytes by scientific expeditions. *Nature* 116: 820. 1925.—Attention is called to the fact that recent expeditions have failed to give attention to this group.—O. A. Stevens.

5127. EVANS, ALEXANDER W. A taxonomic study of *Hymenophyllum*. *Bull. Torrey Bot. Club* 52: 491-506. *Fig. 1-19*. 1925.—A history is given of the treatment of the genus *Hymenophyllum* and its diagnostic characters are discussed. *H. flabellatum* (Labill.) Dumort. is the only species recognized and is made to include the following: *H. furcatum* Pearson, *H. leptopodium* (Tayl.) Steph., *H. pedicellatum* Steph., *Metzgeria rugulosa* Col., *Symphyogyna foetida* Col., *S. integerrima* Steph., *S. longistipa* Col., *S. megalolepis* Col., *S. platycalytra* Col., *S. platystipa* Col., and *Umbraclum Muelleri* Gottsche. The distribution includes Australia, Tasmania, New Zealand, New Caledonia, Fiji Islands, Juan Fernandez, Colombia, and Chile.—P. A. Munz.

5128. GARDET, G. Muscinées nouvelles on peu connues des environs de Nancy. [New or little known bryophytes from the vicinity of Nancy.] *Bull. Soc. Bot. France* 72: 539-541. 1925.—The author reports the following species from the vicinity of Nancy, Department of Meurthe-et-Moselle, France: *Fissidens Julianus* from Foug; *Cinclidotus riparius* (Host) Arn., *Cololejeunea calcarea* (Lib.) Spruce, and *Madotheca platyphylla* (L.) Dum. from Liverdun.—R. Douin (translated).

5129. MILSOM, F. E. Yorkshire bryologists at Holmbridge. *Naturalist* 1924: 336. 1924.—W. H. Burrell.

5130. NICOLAS, G. *Le Mnium punctatum* (L.) Hedw. dans le sud-ouest et la région méditerranéenne. [Mnium punctatum in the southwest (of France) and in the Mediterranean region.] *Bull. Soc. Bot. France* 72: 602-605. 1925.—According to Boulay and Husnot, *Mnium punctatum* is rare in the southwest of France and lacking in the Mediterranean region. The author notes the occurrence of the species at Saint-Pour, in the forest of Eaunes, Department of Hérault, a station subjected to the influence of the Mediterranean Sea. It ought therefore to occur in other calcareous localities subjected to the same influence. In the Mediterranean region of northern Africa it has been found by Corbière and Pitard and also by Maire. The author calls attention also to an anomaly observed in the species—a leaf with the midrib twice bifurcate.—R. Douin (translated).

5131. PEARSON, W. H. Notes on Tasmanian hepatics. *Kew Bull. Misc. Inf.* 1924: 66-75. 5 fig. 1924.—The author gives a report on 2 collections of Tasmanian hepatics made by W. A. Weymouth. The species listed number 53, and several are accompanied by critical notes. The following are proposed as new: *Lophocolea bicuspidata*, *Metzgeria concavula*, *Plagiochila hartziiana*, and *Symphyomitra Weymouthii*. The figures illustrate *Frullania reptans* Mitt., *Lophocolea heterophylloides* var. *decurrens* Pears., and all the new species except the *Metzgeria*.—A. W. Evans.

5132. PINNICK, ALTHA A. On the number of chloroplasts in the cells of the sporophyte of *Anthoceros laevis*. *Bull. Torrey Bot. Club* 52: 515-518. 1925.—But 1 chloroplast was found in sporophyte cells on stained microtome sections of *Anthoceros laevis* L., although freehand sections sometimes gave the appearance of 2 chloroplasts, the number usually reported in the literature. It is thought that at fertilization 1 chloroplast may disintegrate and that the sporophyte thus shows the number characteristic of the gametophyte.—P. A. Munz.

5133. PLANTFOL, L. Sur les formes de croissance de l'*Hypnum triquetrum*. [Growth forms of *Hypnum triquetrum*.] *Compt. Rend. Acad. Sci. Paris* 181: 929-931. 1925.—The term "growth form" is here applied to a form, produced under definite natural or experimental conditions, in which the character of stability, the essential mark of adaptation, is presented. The growth forms developing in response to variations in light and humidity are studied in the present paper, and 5 such forms of *Hypnum triquetrum* are distinguished, in addition to the typical form of the species.—C. H. Farr.

5134. POTTIER, JACQUES. Nouvelles recherches sur le développement de la feuille des Muscinées. [New researches on the development of the leaf in the bryophytes.] *Bull. Soc. Bot. France* 72: 629-689. *Pl. 11-44*. 1925.—For the author's earlier paper see *Bot. Absts.* 9, Entry 879. He here describes the results of new investigations on the general method of growth in the leaves of both mosses and hepatics, studied by means of leaves seen in surface-

view and in longitudinal sections. For work of this type he recommends a double stain with safranin and anilin blue. The species studied were *Andraea petrophila*, *Anomodon viticulosus*, *Barbula unguiculata*, *Hylocomnium splendens*, *H. triquetrum*, *Lophocolea bidentata*, *Plagiochila asplenoides*, *Rhodobryum roseum*, *Scleropodium purum*, and *Tortula muralis*. The text is elucidated by means of 271 figures, 12 of which are photomicrographs. The author follows the development step by step and gives detailed explanations of the various figures. He concludes that the young leaf in the mosses grows by means of a single terminal initial with 2 cutting faces; in the hepatics, by means of 2 terminal initials, each with a single cutting face. In a young moss leaf the initial cuts off a certain number of segments and these, by subsequent divisions, give rise to the cells present in the adult leaf. The orientation of the nuclear spindles in the apical portion of the leaf-rudiment agrees with this explanation. In the opinion of the author the position of certain cell-walls in the stem at the base of the leaf indicates that the recently proposed theory of basal initials is untenable. Such initials, further, would not explain the oblique direction of certain rows of cells, which can clearly be seen in the leaves of *Anomodon*, *Scleropodium* and *Tortula*, although a terminal initial with 2 cutting faces would account for them. In the hepatics the theory of Leitgeb is accepted, according to which the lateral segments cut off from the apical cell of the stem divide into 1 internal and 2 external cells, the latter forming the leaves. Here again the position of certain cell-walls in the stem precludes the possibility of basal initials.—*R. Douin (translated)*.

5135. SHOWALTER, A. M. Germination of the spores of *Riccardia pinguis* and of *Pellia Fabbroniana*. Bull. Torrey Bot. Club 52: 157-166. Pl. 5, fig. 1-2. 1925.—A study was undertaken with spores of *Riccardia pinguis* (L.) S. F. Gray to determine the origin of the apical cell. The 1st division results in the formation of 2 cells unequal in size, the smaller of which divides again unequally in a plane intersecting the previous wall and marking out an apical cell which gives off segments alternately right and left. Rhizoids arise from cells near the posterior end of the sporeling, but in no case were any observed from the end cell or 1st segment given off by the germinating spore. Spores of *Pellia* germinate before being shed from the sporogone; sufficiently young material was obtained of *P. Fabbroniana* Raddi for a study of germination in that species. The spore is elongate and exhibits polarity, the 1st division wall being almost longitudinal. The 2nd division is almost simultaneous in the 2 sister cells and divides each of them transversely. Of the 4 cells now formed the smallest is the basal cell and forms the 1st rhizoid but undergoes no further division. The other 3 cells divide almost simultaneously, the terminal cell finally cutting off an apical cell.—*P. A. Munz*.

MORPHOLOGY AND TAXONOMY OF FUNGI, LICHENS, BACTERIA, AND MYXOMYCETES

H. M. FITZPATRICK, *Editor*

J. E. FLYNN, *Assistant Editor*

(See also in this issue Entries 4525, 4643, 4655, 4683, 4713, 4715, 4720, 4722, 4750, 4754, 4758, 4974, 4992, 5004, 5006, 5024, 5302, 5307, 5312, 5313, 5314, 5319, 5320, 5327, 5329, 5334, 5388, 5413, 5424, 5427, 5428, 5447, 5484, 5496, 5514, 5519, 5544, 5588)

FUNGI

5136. ANONYMOUS. Report on the Imperial mycological conference, 1924. H.M. Stationery Off.: London. 22 p. 1924.

5137. ARTHUR, J. C. Terminology of the Uredinales. Bot. Gaz. 80: 219-223. 1925.—The author indicates the way in which the many terms used to designate the different sori and spore forms of the rust fungi have arisen and points to the confusion attendant on the use of this multifarious terminology. He argues for the general adoption of the simplified terminology presented by himself in an earlier paper. He would use the terms pycnium and pycniospore, aecium and aeciospore, uredinium and urediniospore, and telium and teliospore to designate, respectively, the different sori and spore forms. The term "aecio-telium" is suggested for the sorus of the short cycle rust having the aecium and telium "tele-scoped into one."—*S. G. Lehman*.

5138. ASHBY, S. F. The perfect form of *Stilbum flavidum* Cke. in pure culture. Kew Bull. 1925: 325-328. 2 fig. 1925.—A study of the systematic position of the fungus causing the American coffee-leaf disease. Cooke described in 1880 the *Stilbum* reproductive bodies present normally on the leaf and berry spots. In 1914 Maublanc and Rangel saw a small agaric, *Omphalia flavida*, which was regarded as the perfect fruit of the parasite. In November, 1924, the author studied the disease on a variety of *Coffea arabica* cultivated in Trinidad and succeeded in isolating both reproductive bodies in pure culture.—T. J. Fitzpatrick.

5139. BEARDSLEE, H. C., AND W. C. COKER. The *Mycenas* of North Carolina. Jour. Elisha Mitchell Sci. Soc. 40: 49-91. Pl. 6-30. 1924.—Forty-two species are reported, including several interesting ones from other parts of the U. S. A. Four are European species not before reported from the U. S. A.; these are *M. gypsea* (North Carolina), *M. crocata* (Maine), *M. erubescens* (Ohio), and *M. fellea* (Ohio). Two of the plates show hymenial characters.—W. C. Coker.

5140. BD., CH. [BERNARD]. Schimmels op wespen (Rectificatie). [Fungi on wasps—Correction.] Thee 4: 125. 1923.—Report of *Isaria sphecephila* (see this issue Entry 5159) is, according to van Overeem, incorrect. *Hirsutella saussurei* (Cooke) Speare (*Phaeoisaria gracilis*) is said to be the correct name.—Carl Hartley.

5141. BULLER, A. H. R., AND T. C. VANTERPOOL. Violent spore-discharge in *Tilletia tritici*. Nature 116: 934-935. 1 fig. 1925.—The writers grew this fungus on 4% malt-agar and were able to observe the secondary conidia to be violently discharged from their sterigmata with the accompaniment of a drop excretion at the spore hilum. The ordinary process of development is described, also several variations. The authors conclude that the so-called secondary conidia of *Tilletia* are in reality the true basidiospores, and that the primary conidia are morphologically equivalent to sterigmata.—O. A. Stevens.

5142. BURT, E. A. The Thelephoraceae of North America, XIV. Ann. Missouri Bot. Gard. 12: 213-357. 1925.—A taxonomic monograph of the North American species of *Peniophora*. A key to the 120 species described is based upon color and morphological characters, as well as adnation to substratum. Great labor has been expended in the segregation of morphological characters of species which superficially appear identical and which might be referable to 1 species if too much reliance is given to previously published descriptions. In the identification of species, sectional preparations of sporulating specimens is necessary. "Of the 120 species of *Peniophora* described, 36 occur in Europe as well as in North America and 11 others have been already recognized as North American species. The remaining 73 species are unlike those which the writer has been able to recognize among the known species . . . and have therefore to be described as new. It is quite probable that nearly all of these . . . will bear the test of study by foreign mycologists . . . for most of them are of local occurrence . . . and distributed with surprising uniformity over the great area of North America." The new species are *Peniophora arachnoidea*, *P. odontoides*, *P. exigua*, *P. laxa*, *P. humifaciens*, *P. cana*, *P. irregularis*, *P. albofarcta*, *P. asperipilata*, *P. albugo*, *P. albula* Atkinson and Burt, *P. Thujae*, *P. Montana*, *P. terricola*, *P. magnahypha*, *P. exilis*, *P. livida* Fries in herb., under '*Corticium* n. sp.,' *P. piliseta*, *P. mexicana*, *P. ludoviciana*, *P. fusca*, *P. zonata*, *P. laminata*, *P. vernicosa* E. and E. in herb., n. sp., *P. texana*, *P. flammea*, *P. isabellina*, *P. subiculosa*, *P. septocystidia*, *P. canadensis*, *P. affinis*, *P. inflata*, *P. Sheari*, *P. hiulca*, *P. phosphorescens*, *P. limonia*, *P. amoena*, *P. firma*, *P. Burtii* Romell, *P. Burkei*, *P. verticillata*, *P. pilosa*, *P. Peckii*, *P. heterocystidia*, *P. borealis* (Peck) Burt, *P. Kauffmannii*, *P. alba*, *P. duplex*, *P. tenella*, *P. admirabilis*, *P. versata*, *P. Taxodii*, *P. investiens*, *P. typhicola*, *P. carnosa*, *P. Sacchari*, *P. medioburiensis*, *P. alutaria*, *P. separans*, *P. stratosa*, *P. tabacina*, *P. fusco-marginata*, *P. Seymouriana*, *P. Farlowii*, *P. coloreae*, *P. decorticans*, and *P. argentea* E. and E. in herb. n. sp. *Peniophora convolvens* Bres. and *P. gigaspora* Massee are too incompletely described to include. The new combinations reported are *Peniophora Sambuci* (Pers.) Burt, *P. coccineo-fulva* (Schw.) Burt, *P. Roumeguerii* Bres. in litt., *P. miniata* (Berk.) Burt, *P. subapiculata* (Bres.) Burt, *P. odorata* (Karsten) Burt, *P. pertenuis* (Karsten) Burt, *P. citrinella* (B. & C.) Burt, *P. martiana* (B. & C.) Burt, *P. pruinata* (B. & C.) Burt, and *P. rimosissima* (B. & C.) Burt.—For the aid of mycologists especially interested in the Thelephoraceae, Burt has appended to the introductory remarks a list of species of *Peniophora* which are foreign to North America and not known to him "except from the more or less satisfactory published descriptions."—S. M. Zeller.

5143. COKER, W. C. The Geasters of the United States and Canada. Jour. Elisha Mitchell Sci. Soc. 39: 170-221. Pl. 18-36. 1924.—Twenty-five species of *Geaster* and 1 of *Astraeus* are included. The smallest known *Geaster* is *G. leptospermus*, which has a very peculiar habit of growing on mossy trunks of living trees. It is known only from Chapel Hill. Two of the plates show spore characters.—W. C. Coker.

5144. COKER, W. C., AND H. C. BEARDSLEE. The Collybias of North Carolina. Jour. Elisha Mitchell Sci. Soc. 37: 83-107. Pl. 1 + 4-23. 1921.—Twenty-two species are described, 2 of them, *C. cirrata* and *C. semitalis*, not before known from America, and 1, *C. lilacina*, as new. In addition to photographs there is 1 plate showing spores and hymenial characters.—W. C. Coker.

5145. COKER, W. C., AND H. C. BEARDSLEE. The Laccarias and Clitocybes of North Carolina. Jour. Elisha Mitchell Sci. Soc. 38: 98-126. Pl. 1 + 7-33. 1922.—Four species of *Laccaria* and 20 of *Clitocybe* are reported from the State. One of these is left without a name. One of the plates is of spore drawings.—W. C. Coker.

5146. COKER, W. C., AND J. N. COUCH. A new species of *Thraustotheca*. Jour. Elisha Mitchell Sci. Soc. 39: 112-115. Pl. 8. 1923.—*Thraustotheca achlyoides* is described. Its spores escape in a manner not found in any other species of the Saprolegniaceae, behaving in a way intermediate between *Achlya* and *Thraustotheca*.—W. C. Coker.

5147. COKER, W. C., AND J. N. COUCH. Revision of the Genus *Thraustotheca*, with a description of a new species. Jour. Elisha Mitchell Sci. Soc. 40: 197-202. Pl. 38-40. 1924.—This 2nd species of *Thraustotheca* described by the authors gives the genus 3 species and requires some modification of the generic description. The new species, *T. primoachlya*, shows sporangial behavior of both *Achlya* and *Thraustotheca*, some sporangia emptying at their tips and others disintegrating and allowing the spores to fall apart in all directions. All 3 species are illustrated.—W. C. Coker.

5148. COKER, W. C., AND J. N. COUCH. The Gasteromycetes of North Carolina. Jour. Elisha Mitchell Sci. Soc. 38: 231-243. Pl. 71-83. 1923.—In this chapter the authors give a key to the families and treat the Phalloids occurring in the State. The authors had intended to cover the whole order in several chapters, but after the publication of one other chapter, it was decided to publish the whole in book form, extending the field to the eastern U. S. A. and Canada. This volume is expected to appear in 1927.—W. C. Coker.

5149. COKER, W. C., AND F. A. GRANT. A new genus of water mold related to *Blastocladia*. Jour. Elisha Mitchell Sci. Soc. 37: 180-182. Pl. 32. 1922.—A supposed new genus with 1 species, *Septocladia dichotoma*, has turned out to be the same as *Allomyces arbuscula* Butler-*Blastocladia strangulata* Barrett. The plant is at present known only from India, Ithaca, New York, Chapel Hill, North Carolina, and the Philippines.—W. C. Coker.

5150. COUCH, J. N. A dioecious water mold (*Dictyuchus monosporus*). Jour. Elisha Mitchell Sci. Soc. 40: 116. 1924.—The author is the first to find a truly dioecious member of the Saprolegniaceae. By crossing a strain from Wisconsin with one from North Carolina Couch secures abundant sexual reproduction. The resulting organs vary sufficiently to invalidate specific distinctions heretofore recognized.—W. C. Coker.

5151. COUCH, J. N. A new dioecious species of *Choanephora*. Jour. Elisha Mitchell Sci. Soc. 41: 141-150. Pl. 8-11. 1925.—The new species first appeared in the botanical laboratory at Chapel Hill on corn meal agar in a petri dish with other fungus material brought from Florida. This strain was completely sterile sexually in pure culture. Blossoms of *Hibiscus syriacus* brought in from the Arboretum and put into a damp chamber soon showed abundant growth of the same fungus. This strain also was sterile alone, but when crossed with the first gave abundant zygotes. The plant proves to be a new species and is given the name *C. conjuncta*, making the 4th known species of the genus. In its vegetative habit, the plant has a peculiar appearance as if one plant were parasitizing another. This is due to the peculiar habit of the aerial hyphae which twine tightly about the stalks of the conidiophores. The development of the zygotes most nearly resembles that of *Piptocephalis*.—W. C. Coker.

5152. COUCH, J. N. Some observations on spore formation and discharge in *Leptolegnia*, *Achlya*, and *Aphanomyces*. Jour. Elisha Mitchell Sci. Soc. 40: 27-42. Pl. 4-5. 1924.—Cilia

in *Leptoglenia* are formed by thinning of the parietal membrane between the spore origins into 1-2 strands which connect the spores, as a rule, until after discharge. Upon discharge, these threads are broken, and as the spore reshapes itself they move around to occupy the normal position of cilia. The nuclei of the vegetative hyphae divide by indirect division, no nuclear division occurring within the sporangia, the supernumerary nuclei degenerating, leaving, as a rule, a single nucleus in each spore origin. Occasionally 2 nuclei remain. The spores in the species of *Achlya* investigated are held together while emerging, by threads which probably originate from the parietal lining membrane. Upon discharge the contraction of these connecting threads plays an important part in causing the spores to encyst in a hollow sphere. Killed on emerging, the threads were in some cases seen to be on opposite pointed ends of the spores. In other cases they were found to be in the normal position for cilia. All intermediate stages between these 2 positions occur. The spores of *Aphanomyces* are held together by threads formed by the contraction of the parietal membrane. These threads persist during spore discharge, as observed by Rothert, and upon discharge doubtless play an important part in causing the spores to collect in a ball. None of the threads was seen occupying the position of cilia. In the light of these observations, Rothert's theory of a ball of jelly or Hartog's theory of adelphotaxy is unnecessary to explain the collecting of the spores in a ball at the sporangial tip.—*W. C. Coker.*

5153. CRAWFORD, O. G. S. Rate of growth of fungus rings. *Nature* 116: 938. 1925.—The prominence of fungus rings in air-photographs is noted and prints are offered for study.—*O. A. Stevens.*

5154. DODGE, B. O. Organization of the telial sorus in the pine rust, *Gallowaya pinicola*, *Arth.* *Jour. Agric. Res.* 31: 641-651. *Pl. 1-2, fig. 1.* 1925.—The vegetative hyphae of *Gallowaya pinicola* are composed of uninucleated cells. Pycnia are sometimes developed between the mesophyll and the hypodermal tissue but pycnosporos are rarely matured. Teliospores of *Gallowaya* have hitherto been reported as being sessile. The author states that the spores are not borne as they are in other species of the *Coleosporium* group but are borne in chains. The telial primordium is composed of chains of cells massed beneath the hypodermis. The terminal cells in the chains, by swelling and elongating, act as a buffer tissue which functions in breaking open the underlying host tissues. Cell fusions occur between certain intercalary cells in the chains composing the primordium; the fusing cells are usually the 3rd or 4th cells from the ends. The terminal cells in the primordium usually persist and are thrown off with the breaking up of the epidermis. Several binucleate cells are cut off above the fusion basal cell. Nuclear fusions occur in regular order, beginning with the oldest binucleated cell in the chain. As the terminal spore germinates forming an internal basidium, the lower end of the cell wall swells and elongates, thus forcing the protobasidium farther out in the sorus. While all the binucleated cells cut off are potentially spore cells, some of them become disorganized, owing to excessive elongation.—*John W. Roberts.*

5155. DOYER, CATHARINA M. Über die sogenannten Pestalozzia Krankheiten. [Investigations on the so-called Pestalozzia diseases.] *Mededeel. Phytopath. Lab. "Willie Com. Scholten"* 9. 1-72. 2 pl., 25 fig. 1925.—In this work the question is treated whether fungi of the genus *Pestalozzia* de Notaris are capable of causing such diseases as damping-off, blight and "Einschnürungskrankheit" on conifers, leaf blight on *Rhododendron*, tea, palm and lupinus, etc. It is shown that *Pestalozzia Lupini* Sorauer is identical with *Ceratophorum setosum* Kirchner, which causes leaf blight on *Cytisus*, *Laburnum* and *Lupinus*. This seems to be the only "Pestalozzia" which is of parasitic nature.—*Johanna Westerdijk.*

5156. FERDINANDSEN, C., OG Ö. WINGE. *Cenococcum* Fr. A monographic study. *Kgl. Vet. og Landbohøjskoles Aarsskr.* 1925: 332-385. 17 fig. 1925.—In humus and in peat are commonly found, throughout a great part of Europe, the small black bodies known as *cenococcum geophilum* Fr. In the present paper many new facts about these have been brought together and they bring out evidence that the bodies are true fungus sclerotia. Regarding the synonymy the authors have shown, by studying type specimens, that *C. geophilum* Fr. (1825) is identical with *Lycoperdon graniforme* Sow. (1800). Hereafter, the fungus is to be termed *cenococcum graniforme* (Sow.) n. comb. A chronological survey is given of myco-

logical works in which *Cenococcum* is described (Schmilz 1843, Tulasne 1862). In one of Schmilz' figures the clamp connections of the hyphae of Basidiomycetes are shown, 13 years before Hoffmann (1856), to whom this discovery is generally attributed. Collections of fossil *Cenococcum* in peat are often recorded. Living material has been found in the U. S. A., Norway, Sweden, Denmark, England, Belgium, France, Germany, Russia and Italy. The ecological conditions favoring the fungus are discussed and its collection in arctic places is predicted. The brown hyphae are present in humus in enormous quantities. The sclerotia are generally formed in early summer and germinate in the period from late autumn to spring. The young sclerotia are light brown, solid but soft; later the color changes to black and the sclerotia become brittle like coal and often hollow. Before germination the cells of the sclerotia become filled with oil and later the cell walls in the interior parts gelatinize and hyphal structures develop. No spores or conidia have been found and the authors doubt their existence.—*C. A. Jørgensen.*

5157. FISCHER, ED. *Mykologische Beiträge* 31. *Der Wirtswechsel der Sclerotinia rhododendri nebst Bemerkungen zur Frage der Entstehung der Heteroecie.* [The heteroecism of *S. rhododendri* in relation to the question of the origin of heteroecism.] *Mitteil. Naturf. Ges. Bern* 1925: 24-37. 4 fig. 1926.

5158. FISCHER, ED. *Zur Systematik der schweizerischen Trüffeln aus den Gruppen von Tuber excavatum und rufum.* [A systematic account of the Swiss truffles of the groups, *Tuber excavatum* and *T. rufum*.] *Ver. Naturf. Ges. Basel* 35: 34-50. Fig. 1-9. 1923.—*Tuber lapideum* Matt. is reduced to a subspecies under *T. excavatum* Vitt. *Tuber fulgens* Quelet is recognized. *Tuber rufum* Pico contains n. var. *apiculatum* and n. var. *oblongisporum*. *T. rutilum* Hesse is reduced to a subspecies under this species and contains *oblongisporum* n. var. and *brevisporum* n. var. *Tuber nitidum* Vitt. is recognized and *T. malacodermum* n. sp. is proposed.—*C. W. Dodge.*

5159. GARRETSEN, A. J. *Engangs aangetast dor een schimmel.* [Insect attacked by fungus.] *Thee* 4: 91-92. *Illus.* 1923.—A harmful Hymenopteron is found to be attacked in the Dutch East Indies by a fungus determined by Ch. Ferriere as *Isaria sphecephila* Ditm. (See this issue, Entry 5140).—*Carl Hartley.*

5160. GILKEY, HELEN M. Five new hypogaeous fungi. *Mycologia* 17: 250-254. Pl. 26. 1925.—*Tuber giganteum*, *T. longisporum*, *T. bisporum*, *Choeromyces ellipsosporus*, and *Barssia* n. gen. of *Tuberaceae*, with *B. oregonensis*, are described as new.—*G. R. Bisby.*

5161. GROVE, W. B. The British species of *Ceuthospora* and *Cytosporina*. *Kew Bull.* 1923: 353-359. 1923.—The author describes and fully annotates 7 species of *Ceuthospora*, of which *C. Hederæ* is proposed as new, and 3 species of *Cytosporina*. New combinations are *Cytosporina Acharii* from *Cytospora Acharii* Sacc. and *C. flavovirens* from *Cytospora flavovirens* Sacc. Five doubtful species of *Cytosporina* are annotated.—*T. J. Fitzpatrick.*

5162. GUSZTAV, MOESZ. Die Schimmelpilze St. Schulzer's von Muggenburg. [Schulzer's moulds.] *Folia Cryptogamica* 12: 57-64. 1925.

5163. HARVEY, JAMES VERNON. A study of the water molds and *Pythiums* occurring in the soils of Chapel Hill. *Jour. Elisha Mitchell Sci. Soc.* 41: 151-164. Pl. 12-19. 1925.—The author makes the surprising discovery that water molds belonging to the *Saprolegniaceae* are abundant in soils of various kinds. Up to this time no member of the family was known to occur in the soil except 2 parasitic species of *Aphanomyces* on the roots of beets and peas. Nearly all specimens of soil taken from widely scattered stations around Chapel Hill show some member of the family within the first 6 inches and frequently at greater depths. Ten previously known species belonging to 6 genera were found. There occurred also 2 *Pythiums*, *Allomyces arbuscula*, and *Olpidiopsis* sp. In addition, a peculiar new genus with 2 species appeared. The genus, *Geolegnia*, is described by Coker and the 2 species by Coker and Harvey as *G. inflata* and *G. septisporangia*. The genus differs from all other *Saprolegniaceae* in the absence of any swimming stage, and in the peculiar sporangia and very large spores. There were also found 2 other new species belonging to known genera. These are *Pythiopsis intermedia* Coker and Harvey and *Leptolegnia subterranea* Coker and Harvey.—*W. C. Coker.*

5164. HERRMANN, E. Die rotenden *Inocybe*-Arten. [Reddish species of *Inocybe*.] *Zeitschr. Pilzkunde* 12: 18-21. 1922.

5165. HERTER, W. Der rote Brotschimmelpilz, *Oospora aurantiaca* (Lev.) Hert. [The red bread mold.] Zeitschr. Pilzkunde 1: 14-18. 1922.

5166. HÖHNEL, F. Neue Fungi imperfecti. I. Mitteilung. (Aus den hinterlassenen Schriften herausgegeben von J. Weese.) Mitteil. Bot. Lab. Tech. Hochschule Wien 1: 42-48. 1924.—The new genus *Apocystospora* Höhn. is based on *A. visci* Höhn. and the following new species are described: *Phlyctaena Ranunculacearum* Höhn., *P. pithya* Höhn., *P. Malvacearum* Höhn., *Micropera fasispora* Höhn., and *Discula pomacearum* Höhn.—H. Cammerloher (translated).

5167. HÖHNEL, F. Neue Fungi imperfecti. II. Mitteilung. (Aus den hinterlassenen Schriften herausgegeben von J. Weese Mitteil. Bot. Lab. Tech. Hochschule Wien 1: 71-77. 1924.—The following are described as new species: *Phlyctaena Lapparum* Höhn., *Discosporium rugulosum* Höhn., *D. exiguum* Höhn., *Myrofusisococcum nervisequum* Höhn., *Cylindrocolla episphaeria* Höhn. and the new genus, *Desmopateella* Höhn. is described on the new species, *D. Salicis* Höhn.—H. Cammerloher (translated).

5168. HÖHNEL, F. Neue Fungi Imperfecti. III. Mitteilung. (Herausgegeben von J. Weese.) Mitteil. Bot. Lab. Tech. Hochschule Wien 2: 1-3. 1925.—The new genus *Coniella* is based on the new species *C. pulchella* Höhn. and the new genus *Harposporella* is described with the new species *H. eumorpha* Höhn. and *H. harpospora* Höhn. The new species *Diplopettis graminella* Höhn. and *Sphaeropsis Ritae* Höhn. are also described.—H. Cammerloher (translated).

5169. HÖHNEL, F. Neue Fungi Imperfecti. IV. Mitteilung. (Herausgegeben von J. Weese.) Mitteil. Bot. Lab. Tech. Hochschule Wien 2: 33-39. 1925.—The new genus *Chaetobasidiella* Höhn. based on *C. vermicularioides* n. sp., and the following new species are described: *Chalara flavopruinata* Höhn., *Endoconidium abietinum* Höhn., *Thyrostroma Salicis* Höhn., and *Dothiorellina Salicis* Höhn.—H. Cammerloher (translated).

5170. HÖHNEL, F. Ueber den Schlauchpilz von *Discosporium Pyri* Höhn. und einige verwandte Arten. [The perfect stage of *D. Pyri* and related species.] (Herausgegeben von J. Weese.) Mitteil. Bot. Lab. Tech. Hochschule Wien 2: 29-31. 1925.—*Discosporium Pyri* is a conidial form of *Tympansis conspersa*. Notes on other connections are given.—From abst. by H. Cammerloher.

5171. HÖHNEL, F. Ueber die Familie der Actinothyriaceen Höhn. [The family Actinothyriaceae.] (Herausgegeben von J. Weese.) Mitteil. Bot. Lab. Tech. Hochschule Wien 2: 32. 1925.—The Actinothyriaceae are conidial forms which resemble the Pycnothyriaceae. They belong to the Tuberculariaceae. Three genera are included: *Actinothyrium*, *Actinopelle*, and *Columnothyrium*.—H. Cammerloher (translated).

5172. HÖHNEL, F. Ueber die Gattung *Arthrimum* Kunze. [The genus *Arthrimum*.] (Herausgegeben von J. Weese.) Mitteil. Bot. Lab. Tech. Hochschule Wien 2: 9-16. 1925.

5173. HÖHNEL, F. Ueber die Gattung *Chaetospermum* Sacc. [The genus *Chaetospermum*.] (Herausgegeben von J. Weese.) Mitteil. Bot. Lab. Tech. Hochschule Wien 1: 86-88. 1924.

5174. HÖHNEL, F. Ueber die Gattung *Dilophia* Saccardo. [The genus *Dilophia*.] (Herausgegeben von J. Weese.) Mitteil. Bot. Lab. Tech. Hochschule Wien 1: 91-94. 1924.

5175. HÖHNEL, F. Ueber die Gattung *Entomosporium* Lévl. [The genus *Entomosporium*.] (Aus den hinterlassenen Schriften.) Mitteil. Bot. Lab. Tech. Hochschule Wien 1: 31-32. 1924.—The genus *Entomosporium*, usually placed in the Leptostromataceae, is here put in the Leptomelanconidiaceae.—H. Cammerloher (translated).

5176. HÖHNEL, F. Ueber die Gattung *Montagnula* Berlese. [The genus *Montagnula*.] (Herausgegeben von J. Weese.) Mitteil. Bot. Lab. Tech. Hochschule Wien 1: 49-51. 1924.—The genus *Montagnula* is placed in the Phyllachorinales near *Dictyochorella* Theiss. et Syd.—H. Cammerloher (translated).

5177. HÖHNEL, F. Ueber die Gattung *Neottiospora* Desm. [The genus *Neottiospora*.] (Aus den hinterlassenen Schriften herausgegeben von J. Weese.) Mitteil. Bot. Lab. Tech. Hochschule Wien 1: 78-85. 1924.

5178. HÖHNEL, F. Ueber die Gattung *Pestalozzina* Sacc. [The genus *Pestalozzina*.] (Herausgegeben von J. Weese.) Mitteil. Bot. Lab. Tech. Hochschule Wien 2: 26-29. 1925.

5179. HÖHNEL, F. Ueber die Gattung *Rhabdospora*. [The genus *Rhabdospora*.] (Herausgegeben von J. Weese.) Mitteil. Bot. Lab. Tech. Hochschule Wien 1: 94-98. 1924.—The generic name *Rhabdospora* can be used only in the sense of Saccardo with the type species *R. pleosporoides*, for *Rhabdospora* Durieu & Montagne is equivalent to *Septoria* Fries.—H. Cammerloher (translated).

5180. HÖHNEL, F. Ueber die systematische Stellung der Gattungen *Tympanis* Tode, *Scleroderris* Fr., *Godronia* Moug., und *Astrocalyx* Höhn. [The systematic position of the genera *Tympanis*, *Scleroderris*, *Godronia*, and *Astrocalyx*.] (Aus den hinterlassenen Schriften herausgegeben von J. Weese.) Mitteil. Bot. Lab. Tech. Hochschule Wien 1: 67-70. 1924.—The four genera are placed in the Tryblidiaceae. The species *Cenangium ferruginosum* also belongs in this family, while the other species of *Cenangium* are placed in *Encoelia* Fr.—H. Cammerloher (translated).

5181. HÖHNEL, F. Ueber *Sphaeropsis abnormis* Berk. et Thüm. (Herausgegeben von J. Weese.) Mitteil. Bot. Lab. Tech. Hochschule Wien 1: 98. 1924.—*Sphaeropsis enormis* Sacc. is the same as *Oncospora bullata* Kalchbr. & Cooke.—H. Cammerloher (translated).

5182. HORNBERG, FR. V. Schwammerlsuche in Sibirien. [Mushroom collecting in Siberia.] Zeitschr. Pilzkunde 5: 19-21. 1925.—The collecting of mushrooms and their use by German soldiers to eke out the rations of a prison camp in Siberia are described. *Psalliota arvensis* was especially abundant.—F. Weiss.

5183. JENKINS, ANNA E. *Sphaeronemella rosae* Ell. & Ev. [on *Rosa hugonis*]. U. S. Dept. Agric. Plant Disease Rept., Suppl. 37: 1925.—*Sphaeronemella rosae* Ell. & Ev. is reported as occurring on *Rosa hugonis* in Maryland and Virginia.—G. Hamilton Martin, II.

5184. JENKINS, ANNA E. *Stilbum* sp. [on rose varieties]. U. S. Dept. Agric. Plant Disease Rept., Suppl. 42: 363. 1925.—This was identified from several rose varieties collected in Cuba by J. R. Weir and J. F. Faris, and is possibly identical with *Stilbum* sp. previously reported on rose by J. B. Rorer and shown by him to be parasitic.—G. Hamilton Martin, II.

5185. KALLENBACH, FR. *Boletus rhodoxanthus* (Krbhlz.) Kbh. Der Purpur-Rohrling. [The purple *Boletus*, *B. rhodoxanthus*.] Zeitschr. Pilzkunde 5: 27-31. 1925.—The name *Boletus rhodoxanthus*, first used by Krombholz but without an adequate diagnosis, is applied to a *Boletus* which has been confused with *B. purpureus* Fr., and regarded as a variety of *B. sanguineus*. It is described and illustrated in color.—F. Weiss.

5186. KALLENBACH, FRANZ. Merkwürdige Pilzfunde. [Unusual fungi collected.] Zeitschr. Pilzkunde 4: 50-51. 1925.

5187. KALLENBACH, FRANZ. Merkwürdige Pilzkunde 3. Geotropismus bei Pilzen. [Remarkable fungus facts. Geotropism in mushrooms.] Zeitschr. Pilzkunde 5: 58-63. 1925.—This is a review of the relation of geotropism to spore liberation in the Hymenomycetes, illustrated by an example of adjustment to gravity in a specimen ordinarily known as *Polyporus unguilatus* Schaeff., but which the author considers a form of *P. igniarius*.—F. Weiss.

5188. KALLENBACH, FRANZ. Mobilmachung aller staatlichen und städtischen Behörden zur Unterstützung unserer Arbeit für die Verbreitung volkstümlicher Pilzkenntnisse. [Mobilization of all state and municipal authorities for the support of our work on the spread of popular information on fungi.] Zeitschr. Pilzkunde 1: 72-76. 1922.

5189. KALLENBACH, FRANZ. Nachtrag zu "Termiten und Ameisenpilze." [Contribution on termite- and ant-fungi.] Zeitschr. Pilzkunde 4: 78-80. 1925.

5190. KALLENBACH, FRANZ. Richens ziegelroter Risspilz. *Inocybe lateraria*, Ricken. [Richens brick red *I. lateraria*.] [In: Patouillard Bres. 1905. (Forschungs- und Erfahrungsaustausch.)] Zeitschr. Pilzkunde 4: 67. 1925.

5191. KALLENBACH, FRANZ. Seltene Pilzfunde (Forschungs- und Erfahrungsaustausch). [Rare fungi.] Zeitschr. Pilzkunde 4: 67-68. 1925.

5192. KALLENBACH, FRANZ. *Trametes cinnabarina* Jacq. (Zinnober-Tramete), *Polystictus hirsutus* Schrad. (Striegeliger Porling) und *Lenzites tricolor* (schillernder Blätting). Zeitschr. Pilzkunde 4: 63-66. 1925.

5193. KEILIN, D. On a new type of fungus: *Coelomomyces stegomyiae* n. g., n. sp., parasitic in the body cavity of the larvae of *Stegomyia scutellaris* Walke (Diptera Nematocera, Culicidae). Parasitology 13: 225-234. 7 fig. 1921.—The author reports finding a fungus in

one of the 6 larvae of *Stegomyia scutellaris* received from the Federated Malay States. The fungus was studied from this material fixed and preserved in 10% formaldehyde. Localization of the fungus is in the larvae; its mycelium, development and structure of sporangia and of spores, probable mode of infection, and systematic position are briefly presented. The writer places the fungus in a new genus, *Coelomomyces*, as *C. stegomyiae* n. sp. Lists of parasites of mosquito larvae recorded in various publications and of references are given.—*C. D. Sherbakoff*.

5194. KILLERMAN, S. Ch. H. Persoon. II. Zeitschr. Pilzkunde 5: 50-57. 1925.—This part is concerned with the identification of the fungi illustrated in Persoon's works. Tables are presented giving modern names in reference to Persoon's in the plates of his extant works.—*F. Weiss*.

5195. KÜHNER. Le développement du *Lentinus tigrinus* Bull. [Development of *Lentinus tigrinus*.] Compt. Rend. Acad. Sci. Paris 181: 137-139. Fig. 1-4. 1925.—In a large number of agarics, especially in the Leucosporaeae, the development of the hymenium is exogenous. Atkinson showed that the hymenium of *Armillaria mellea* is endogenous. This paper is a study of the formation of the hymenium in *Lentinus tigrinus*, which is shown to be exogenous. The ring here, therefore, does not have the same significance as in endogenous forms, but is rather simply a proliferation of the peripheral region of the stipe.—*C. H. Farr*.

5196. LOHWAG, H. Der Übergang von *Clathrus* zu *Phallus*. [The transition from *Clathrus* to *Phallus*.] Arch. Protistenk. 49: 237-259. 7 fig. 1924.—The article is mainly a review of the literature. The author concludes that *Clathrus* is a multicapped fungus form, and *Phallus* is comparable to a single-capped *Clathrus*. The part of the receptaculum heretofore called the cap is homologous with the ring of the Amanitae. *Montagnites* is considered a relative of the Phallaceae.—*R. P. Hall*.

5197. LUIJK, A. VAN. Frequentiekurven als hulpmiddel ter begrenzing van geslachten. [Frequency curves as aids in delimitation of genera (in fungi).] Mededeel. Nederland. Mycol. Ver. 14. (Jan.) 1925.

5198. MARTIN, G. W. Morphology of *Conidiobolus villosus*. Bot. Gaz. 80: 311-318. Pl. 16, fig. 1-3. 1925.—This fungus is described as a new species from Iowa and its morphological features as they occur in culture media are given. Only 1 kind of spore is produced, namely, a globose conidium having a large basal papilla. Under conditions unfavorable for germination, the conidia become transformed into thick-walled, dark colored resting spores bearing numerous soft, blunt, hair-like appendages. When the conidium is fully formed, the tip of the turgid conidiophore projects into the conidium as a short domeshaped columella. Forceful discharge of the conidium, which may be projected 30 mm. or more, is accomplished by a sudden reversal of the part of the conidium in contact with the columella. No evidence of conjugation has been observed.—*S. G. Lehman*.

5199. MORQUER, R. Sur la biologie de *Mucidula mucida* (Fr.) Pat. [The biology of *M. mucida*.] Compt. Rend. Acad. Sci. Paris 181: 1161-1162. 1925.—*Mucidula mucida* and *Ganoderma applanatum* (Basidiomycetes) were found growing on the same living tree. They were transferred to pure culture, and a marked juxtaposition and entanglement of the mycelia of these 2 epixyous parasites, one an agaric and the other a polypore, was found. *Mucidula mucida* gives rise in darkness to carpophores of which the cap and spores are normal and fertile. The mycelia are perennial both in culture and in nature.—*C. H. Farr*.

5200. NADSON, G., ET G. PHILIPPOV. Une nouvelle Mucorinée, *Mucor guilliermondii* nov. sp. et ses formeslevures. [*Mucor guilliermondii* n. sp. and its yeast-forms.] Rev. Gén. Bot. 37: 450-461. 1925.—The authors describe and figure *Mucor guilliermondii* n. sp. which produces, particularly in sugar solutions in the absence of oxygen, an abundance of yeast-like stages.—*J. C. Gilman*.

5201. NÔC, F., ET JOUENNE. Les mycétomes à grains noirs du Sénégal. [Black grain mycetomes of Senegal.] Ann. Inst. Pasteur 36: 365-385. Fig. 1-5. 1922.—The Senegalese mycoma is a disease similar in nature to Madura foot, but the causal fungus in the case of the former produces a black pigment, and hence the term "grains noirs." A fungus has been isolated from 2 out of 3 cases and has been studied morphologically and physiologically on various media. It resembles *Madurella mycetomi*, *M. tozeuri*, and *M. tabarkae* in its mor-

phology and physiology without, however, agreeing exactly with the descriptions given for any one of these species. Tentatively it is placed under *M. mycetomi* Laveran.—A. G. Plakidas.

5202. PASCHER, A. [Rev. of: ARNAUDOW, N. Untersuchung über den Tiere fangenden Pilz Zoophagus insidians. (Investigation of the animal-capturing fungus, *Z. insidians*.) Flora 118/119 (Goebel-Festschrift): 1-16.] Arch. Protistenk. 52: 378-379. 1925.

5203. PIESCHEL, E. Einiges über Boleten. [Concerning Boleti.] Zeitschr. Pilzkunde 1: 39-40. 1922.

5204. PIESCHEL, E. Einiges über Boleten II. [Concerning Boleti II.] Zeitschr. Pilzkunde 1: 68-69. 1922.

5205. ROBINSON, W. On the conditions controlling growth and reproduction in *Pyronema confluens*. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 444. 1925.

5206. RODWAY, L. Description of two underground fungi. Papers and Proc. Roy. Soc. Tasmania 1923: 108. 1923.—Two species, *Hydnangium clelandi* and *H. mc'alpinei*, are described as new.—(From Australian Sci. Abts.)

5207. RYTZ, WALTHER. Die Verbreitungsweise und das Seltenheitsproblem bei den parasitischen Pilzen, besonders bei den Uredineen. [The mode of distribution and rarity problems in parasitic fungi, especially in the Uredineae.] Ver. Naturf. Ges. Basel 35: 228-242. 1923.

5208. SCHÄFFER. Der schwärzende Zitronentäubling *Russula flava* Romell? [Is the dark citron yellow *Russula R. flava*?] Zeitschr. Pilzkunde 5: 5-6. 1925.—A previously described *Russula* is now referred to *R. flava* Romell. It differs from other yellow *Russulas* in its darker gray or blackish stipe. It is found in alder swamps in the Baltic regions.—Some critical remarks are appended on the use of odors to characterize specifically forms of *Russula*.—F. Weiss.

5209. SCHÄFFER. Pilzbestimmung und Pilzforschung. [Investigation and determination of fungi.] Zeitschr. Pilzkunde 4: 21-30. 1925.

5210. SCHÄFFER. Sauerkraut- und Selleriepilz. [Sauerkraut- and celery-like mushrooms.] Zeitschr. Pilzkunde 5: 63-67. 1925.—Two species of *Tricholoma* the odor or taste of which respectively suggest sauerkraut and celery are described. The 1st resembles *T. album* in most particulars; the 2nd is *T. apium* n. sp.—F. Weiss.

5211. SEAVER, FRED J. Mycological foray. *Mycologia* 17: 263-265. 1 fig. 1925.—Trout Run, Pennsylvania, was visited.—G. R. Bisby.

5212. SEIDL. Allerlei über unsere Oberlausitzer Pilzflora 1924. [General notes on the mushroom flora of Oberlausitz.] Zeitschr. Pilzkunde 4: 100-101. 1925.—Phenological and miscellaneous notes on mushroom collecting are given. The author supports the edibility of fresh specimens of *Helvella esculenta*.—F. Weiss.

5213. SHEAR, C. L. Life history and taxonomic problems in *Botryosphaeria* and *Physalospora*. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 451-452. 1925.

5214. SHUTT, D. B. Yeast contamination as a source of explosion in chocolate coated candies. *Sci. Agric.* 6: 118-119. 1925.—A number of unidentified yeasts were found to be the cause of the bursting of chocolate candies in storage.—T. G. Major.

5215. SINGER, R. Kritische Formenkreise aus der Gattung *Russula*. [Critical groups of the genus *Russula*.] Zeitschr. Pilzkunde 5: 13-18. 1925.—This installment deals with *Russula cyanoxantha* (Schff.) Fr., *R. delicata* Fr., *R. chloroides* (Krombh.) Bress., and *R. elephantina* Fr. The former is related to *R. heterophylla*, being connected with it by the form *Petereaui*. *R. delicata* T. M. is the same as *R. chloroides* (Krlz.) Bres., but *R. elephantina* Fr. is different. In preceding installments other cases of synonymy were pointed out.—F. Weiss.

5216. SINGER, R. Zur *Russula*-Forschung. [The determination of *Russulas*.] Zeitschr. Pilzkunde 5: 73-80. 1925.—The manipulation of Maire's sulphovanillin method of staining cystidia is described and its value in differentiating certain closely related species of *Russula* discussed.—*R. constans* Britz. is stated to be the same as *R. ochroleuca* var. *clavata* (Grove) Cke.—A collection of a species identified as *R. roseipes* Cke. and believed to be the same as *R. sphagnophila* Kauf. is described.—Note is made of a number of alpine

species in which rough-walled spores are the rule. This is believed to be an adaptation to wind distribution and lodgment in these habitats.—Schäffer's iodoform *Russula*, identified as *R. Turci*, is found to be distinct from *R. Turci* Bres. and is referred to *R. punctata* Krbz. (*R. amethystina* Quel.)—*R. flava* Rom. is the same as *R. constans* Karst., a sub-species of *R. decolorans*.—*F. Weiss*.

5217. SKVORTZOW, B. W. Zur Kenntnis der Phycomycetes aus der Nordmanschurei, China. [The Phycomycetes of North Manchuria, China.] Arch. Protistenk. 51: 423-433. 14 fig. 1925.—The following organisms are described and figured: *Olpidium entophyllum*, *O. endogenum*, *O. spirogyrae* n. sp., *O. Mongeotia* n. sp., *O. Hautzschiae* n. sp., *Rhizophidium sphaerocarum*, *R. Hormilii* n. sp., *Micromyces spirogyrae* n. sp., *Myzocystium megastomum* de Wildeman forma, *Ancylistes Miurii* n. sp., *Resticularia Oedogonii* n. sp., *Lagenidium ene-cans*, *Aphanomyces Gordejewi* n. sp., and *Leptolegnia caudata*.—*R. P. Hall*.

5218. STIER. Pilzwinter im Swinemünder Park. [Winter mushrooms in the Swine-mund.] Zeitschr. Pilzkunde 4: 96-100. 1925.

5219. STOLL, F. E. Der Dünenphallus. [The dune Phallus.] Zeitschr. Pilzkunde 4: 101-103. 1925.—A form of *Phallus* with rose-colored peridium, characteristically found growing on sand dunes, is described. It may be a form of *P. impudicus*, but possesses some of the characters of *P. iosmus* Berk., or it may be an arenaria form of *P. imperialis*.—*F. Weiss*.

5220. SYDOW, H. Rusts of British Guiana and Trinidad. Mycologia 17: 255-262. 1 fig. 1925.—*Milesina Lygodii*, *Crossospora Stevensii*, and *Maravalia Ingae* are described as new; 33 other species are listed. Pycnia and uredinia were found for *Dasyaspora gregaria*, and are described.—*G. R. Bisby*.

5221. SYDOW, P., ET H. SYDOW. Monographia Uredinearum seu specierum omnium ad hunc usque diem cognitarum descriptio et adunbratio systematica. 4: i-iv + 1-671. Gebrüder Borntraeger: Leipzig, 1924.—This is the concluding volume of this well known systematic work on the rusts. It includes the unconnected stages, that is, Uredineae Imperfectae.—*H. M. Fitzpatrick*.

5222. TEHON, L. R., AND EVE DANIELS. Notes on the parasitic fungi of Illinois—II. Mycologia 17: 240-249. Pl. 25. 1925.—*Phacidium Negundinis*, *Mycosphaerella cornicola*, *Phyllosticta Aquilegiae*, *P. pteleicola*, *P. Allii*, *Phomopsis Callistephi*, *Chaetomella Tritici*, *Sphaeropsis Negundinis*, *Coniothyrium Negundinis*, *Cryptostictis Paeoniae*, *C. Violae*, *Sep-toria Floridae*, *Phaeoseptoria Caricis*, *Leptothyrium maximum*, *Colletotrichum Smilacinae*, *Cercospora Abutilonis*, *C. arborescentis*, *C. Decodontis*, *C. menthicola*, *C. Paeoniae*, *C. Rhapon-tici*, and *C. Zeae-maydis*, are described as new species.—*G. R. Bisby*.

5223. VILLINGER, W. Mehlplize. [Mealy Mushrooms.] Zeitschr. Pilzkunde 5: 68-70. 1925.—This is a partial enumeration of mushrooms having a mealy or doughy taste. A number of these belong to *Tricholoma*, but not all species of this genus smelling or tasting like meal are edible.—*F. Weiss*.

5224. WALKER, J. C. Two undescribed species of *Botrytis* associated with the neck rot of onion bulbs. Phytopathology 15: 708-713. Fig. 1-2. 1925.—Three distinct species of *Botrytis* have been found associated with neck rot of onion bulbs, each producing a different type of rot. *Botrytis allii* Munn produces the "Grey-mold neck rot." The "Mycelial neck rot" is produced by *Botrytis byssoidea* n. sp. and is by far the most important type found in Illinois and Wisconsin. The "Small sclerotia neck rot" produced by *Botrytis squamosa* n. sp. is least serious of the 3 because only the outer scales are attacked. The 2 latter species appear to be distinct from any previously known. Technical descriptions are given and certain distinctive cultural characteristics of each of the 3 species are listed.—*B. B. Higgins*.

5225. WEESE, J. Beitrag Zur Kenntnis der Gattung Calonectria. 2. [Contribution to the knowledge of the genus Calonectria.] Mitteil. Bot. Lab. Tech. Hochschule Wien 1: 51-64. 1924.

5226. WEESE, J. Eumycetes selecti exsiccati. 9. Lieferung: No. 201-225. Mitteil. Bot. Lab. Tech. Hochschule Wien 2: 17-26. 1925.

5227. WEESE, J. Ueber den Formenkreis der Nectria Bolbophylli P. Hennings. [The form group, *N. Bolbophylli*.] Mitteil. Bot. Lab. Tech. Hochschule Wien 1: 88-90. 1924.

5228. WEESE, J. Ueber die Gattung Neoskofitzia Schulzer. [The genus Neoskofitzia.] Mitteil. Bot. Lab. Tech. Hochschule Wien 1: 35-41. 1924.

5229. WEIR, JAMES ROBERT. The genus *Coleosporium* in the Northwestern United States. Mycologia 17: 225-239. Pl. 22-24, fig. 1. 1925.—Descriptions, notes, and photographs of *Coleosporium Adenocaulonis*, *C. Madiæ*, *C. Solidaginis*, *C. occidentalis*, *C. Sonchi-arvensis*, and *C. ribicola*, are given.—G. R. Bisby.

5230. WOLF, FREDERICK A. Some undescribed fungi on sourwood, *Oxydendron Arborescens* (L.) DC. Jour. Elisha Mitchell Sci. Soc. 41: 94-98. Pl. 5-6. 1925.—Three species are described, all growing on the leaves of *Oxydendron*. They are *Sphaerella caroliniana*, *Sphaerulina polyspora*, and *Venturia oxydendri*.—W. C. Coker.

5231. WOLF, FREDERICK A. Strawberry leaf scorch. Jour. Elisha Mitchell Sci. Soc. 39: 141-163. Pl. 9-15. 1924.—The parasite propagates itself by conidia on living leaves throughout the year and by ascocarps on decaying leaves in the spring. It is shown that its proper position is in *Diplocarpon*, and that this genus should be placed in the Phacidiales instead of in the Microthyriaceae as heretofore. *D. earliana* (E. & E.) n. comb. is proposed.—W. C. Coker.

LICHENS

5232. ABBAYES, HENRY DES. Note sur le *Lecidia* (sub. gen. *Bilimbia*) *Corisopitensis* Picq. [A note on *Lecidia* (*Bilimbia*) *Corisopitensis* Picq.] Bull. Soc. Sci. Nat. Ouest France 4^e sér. 3: 74-77. 12 fig. 1923.—This lichen, up to the present not mentioned as occurring in Finistère, has been collected by the author in 2 places in Loire-Inférieure. Its spores are elongated and at maturity are 5-7 septate. The 1st septum is formed in the middle of the spore; then 2 other septa are laid down, simultaneously as a rule, one on either side of the first septum, dividing the 2 cells unequally into 4; of these 4 cells, 2 small median cells are placed, one on either side of the 1st septum, with 2 larger cells situated at the ends of the spore. These latter, alone, continue to divide. They each form 2 other cells in the same manner as indicated above. The process of septation of lichen spores has not been observed up to the present except in certain species of Graphidaceae.—A. de Puymaly (translated).

5233. ABBAYES, HENRY DES. Lichens récoltés en Loire-Inférieure et dans quelques localités de Vendée et Maine-et-Loire (Herborisations de 1923 et 1924). [Lichens collected in Loire-Inférieure and in certain localities of Vendée and Maine-et-Loire (Plant collections of 1923 and 1924.)] Bull. Soc. Sci. Nat. Ouest France 4^e ser. 4: 31-54. 1924.—The author enumerates 139 species and indicates for each the location where collected.—A. de Puymaly (translated).

5234. CHODAT, R., ET L. CHODAT. Les gonidies des lichens et la lichenine. [Lichens gonidia and lichenin.] Compt. Rend. Soc. Phys. Hist. Nat. Genève 41: 74-76. 1924.

5235. FREY, EDUARD. Die Berücksichtigung der Lichenen in der soziologischen Pflanzengeographie, speziell in den Alpen. [A consideration of the lichens in ecological plant geography, especially in the Alps. Verh. Naturf. Ges. Basel. 35: 303-320. 1 fig. 1923.

5236. LINKOLA, K. Über die Isidienbildungen der *Peltigera praetextata* (Flk.) Zopf. [The formation of the isidia of *Peltigera praetextata* (Flk.) Zopf.] Ann. Soc. Zool.-Bot. Fennicae Vanamo 1: 65-90. 2 pl. 1922.—The article is a description, with microphotographs, of the development and growth of the isidia. Isidia are formed partly at the injured margins of the thallus, but very much more abundantly in wounds in various portions of the surface of the thallus which extend to the gonidial layer. Their origin through wound stimuli has been experimentally established. The author considers *Peltigera praetextata* as an independent species. The soredia- and isidia-theory of Nelson-Kajanus is, in relation to this species, entirely untenable.—Author (translated).

5237. LUND, M. Er Laverne Dobbeltvæsener? [Are lichens double organisms?] Nat. Verden 9: 448-461. 11 fig. Copenhagen, 1925.—A review of the theories of Schwendener, Elfving, and Tobler.—Ernst Gram.

5238. OLIVIER, H. Prodomus lichenum Europeorum. Fruticulosi et Foliacei. [Introduction to the lichens of Europe.] Mem. R. Acad. Cienc. y Artes Barcelona 16: 441-529. 1921.

5239. RÄSÄNEN, VELI. Lichens novi vel rariores e taeniis Ladogensibus. Meddel. Soc.

Fauna et Flora Fennica 50: 39-40. 1925.—Contributions to Floristics. *Aspicilia simoensis* n. sp. and *Cetraria cucullata* var. *vainioi* n. var. are described as new.—K. Linkola (translated).

5240. ROBBINS, C. A. *Cladonia apodocarpa*, a new species. *Rhodora* 27: 210-211. 1925 [1926].—*Cladonia apodocarpa* is described as new from New Hampshire, Massachusetts, Maryland, and Virginia. The apothecia are rarely found and are sessile.—S. F. Blake.

5241. VAINIO, ED. A. Lichens in summo monte Doi Sutep (circ. 1675 M. S. M.) in Siam boreali anno 1904 a.D: re C. C. Hosseo collecti. [Lichens collected at the top of Mount Doi Sutep (Some 1675 meters above sea level) in northern Siam, 1904.] *Ann. Soc. Zool.-Bot. Fennicae Vanamo* 1: 33-55. 1921.—Of 69 species listed, 25 are new to science. These belong to the following genera: *Usnea* (1), *Eumitria* (1), *Ramalina* (2), *Parmelia* (4), *Lecanora* (3), *Pertusaria* (1), *Sporopodium* (1), *Catillaria* (1), *Lecidea* (1), *Graphis* (8), *Arthonia* (1), and *Arthopyrenia* (1). In addition, there are 7 new varieties.—K. Linkola (translated).

BACTERIA

5242. BACOT, A. W. The presence of *Bacillus pyocyaneus* in pupae and imagines of *Musca domestica* raised from larvae experimentally infected with the bacillus. *Parasitology* 4: 68-73. 1911.—The author finds that the pupae and imagines of *Musca domestica* bred from larvae infected with *Bacillus pyocyaneus* under conditions which exclude the chance of reinfection in the pupal or imaginal period undoubtedly remain infected with the bacillus; that in the imago the infection is maximal at emergence and then diminishes suddenly; that the possibility of a dangerously pathogenic micro-organism being taken up by the larvae and subsequently distributed by the fly is one which deserves serious consideration.—C. D. Sherbakoff.

5243. BALFOUR, A. The life-cycle of *Spirochaeta gallinarum*. An appreciation and criticism of Dr. E. Hindle's recent paper. *Parasitology* 5: 122-126. 1912.—This is a discussion of E. Hindle's work on *Spirochaeta gallinarum* (*Parasitology* 4: 463) in which attention is called to certain published works of others on the same subject and in which is pointed out some disagreements with Hindle's conclusions.—C. D. Sherbakoff.

5244. GYÖRGY, PAUL. Beitrag zur Systematik der Paracoli-Bazillen. [Contribution to the systematics of the paracoli bacilli.] *Centralbl. Bakt.* 84: 312-386. 1920.

5245. KIRCHENSTEINS, AUGUSTE. Sur la structure et le mode du développement du bacille tuberculeux. [The structure and mode of development of the tuberculosis bacillus.] *Ann. Inst. Pasteur* 36: 416-421. Fig. 1-6. 1922.—In the tuberculosis bacillus (as well as in other bacteria) there appear, at certain stages, granular bodies which are distinct from the rest of the protoplasm. The author considers these bodies as true nuclei or as structures analogous to nuclei, and he differs from the views both of those who consider these granules as spores (or analogous structures) and of those who consider them as degeneration products. Two new staining methods have been developed, and by means of these methods the author has observed what he considers as true mitotic division. Before division a nucleus appears at one end of the bacillus. This nucleus is joined to a 2nd nucleus, which is soon formed, at the opposite end of the bacillus, by a protoplasmic strand. The 1st nucleus divides into 2, the protoplasmic strand dividing longitudinally at the same time. The 2nd nucleus then divides, and this is followed by the division of the bacillus itself.—A. G. Plakidas.

5246. KRISTENSEN, M. Investigations into the occurrence and classification of the haemoglobinophilic bacteria. 272 p. Levin and Munksgaard: Copenhagen, 1922.

5247. LLAGUET, B. Contribution à l'étude microbiologique de l'huître. [A contribution to the microbiologic study of the oyster.] *Bull. Sta. Biol. Arcachon* 21: 25-30. 1924.—The author experimented on *Ostrea edulis* and *Gryphea angulata*. Working with all possible aseptic precautions, he has found in the hepatic body, in the precordial region, etc., of the mollusc, a small quantity of a liquid which he subsequently transferred to an appropriate, perfectly sterile nutritive medium (fish bouillon, oyster bouillon, etc.). Under these conditions he observed the development of 2 micro-organisms which gave the characters of *Diplococcus maris* and *Bacillus incurvatus*, described by Guillemin in 1901 in his thesis for doctorate in Pharmacy relating to the bacteriology of sea water.—A. de Puymaly. (Translated).

5248. MCCONNELL, P. A. Relative values of methods of enumerating bacteria in air. U. S. Bur. Mines, Public Health Repts. 40: 2167-2171. 1925.—This is a report on comparative studies of instruments for sampling bacteria in air, conducted at the U. S. Bureau of Mines Experiment Station.—*L. Greenburg* (Public Health Engineer Absts.).

5249. MAINX, F. [Rev. of: PETERSEN, E. J. A new sapropelic microorganism (*Conidiothrix sulphurea*). Dansk Bot. Arch. 4: 1. 1921.] Arch. Protistenk. 51: 207-208. 1925.

5250. MEDICAL RESEARCH COUNCIL (GREAT BRITAIN). Catalogue of the national collection of type cultures maintained at the Lister Institute of preventive medicine, Chelsea Gardens, London, S. W. 40 p. H. M. Stationery Office: London, 1922.

5251. MELLON, RALPH R. Studies in microbic heredity. II. The sexual cycle of *B. coli* in relation to the origin of variants with special reference to Neisser and Massini's *B. coli-mutabile*. Jour. Bact. 10: 579-588. 1925.—It has been shown that the origin, genetically speaking, of Neisser and Massini's *Bacterium coli-mutabile* is definitely associated with what is regarded as a sexual reorganization, or its equivalent, which occurs with this strain. Delay or loss of capacity for the fermentation of a sugar such as occurs with *B. coli-mutabile* appears to involve the truly pleomorphic cycle that these organisms undergo, which does not of necessity imply that the changes in characters are permanently identified with a fixed morphologic type. *B. coli-mutabile* has been reproduced experimentally. It springs from the wild non-lactose fermenting *B. coli* which in turn was derived from a "normal" strain; it is a transition developmental stage (variant) between these two. The simultaneous or sequential production of acid and alkali by a pure line culture appears to be a function of its capacity to develop phases of growth. Accordingly the loss of ability of *B. coli* to ferment lactose means that the developmental phase bearing this character (the secondary colonies) is absent or undeveloped. These observations are best explained on the ground that bacteria are fungi whose life cycle is not completely known, or at least is not always completely manifested under the conditions of observations, that is, they are Fungi Imperfecti. The cultural and serological heterogeneity which bacteriologists are slowly apprehending finds a most logical explanation on this basis.—*Author's Summary*.

5252. PERKINS, ROGER G. Classification of spore-free gram negative aerobic rods with special reference to fermentation and proteolysis. Jour. Infect. Diseases 37: 232-255. 1925.—After consideration of factors which may be considered of sufficient constancy and significance for classification, the author considers dividing this group of organisms first by their ability to ferment dextrose, then lactose, then sucrose, and gelatin liquefaction. The capsulated organisms would be grouped separately from those not capsulated, under the genus *Encapsulata*. Organisms considered under the genus *Aerobacter* (Bergey) would be included in this group and not given a separate genus. The Voges-Proskauer, methyl-red and citrate tests would be used as supplementary tests and not as tests for major distinction. A suggested classification is appended to the work.—*R. L. Starkey*.

5253. PRINGSHEIM, E. G. [Rev. of: BAUMGARTEL, T. Grundriss der theoretischen Bakteriologie. (Outlines of theoretical bacteriology.) 259 p. 3 fig. Berlin, 1924.] Arch. Protistenk. 51: 204-205. 1925.

5254. PRINGSHEIM, E. G. [Rev. of: BAVENDAMM, W. Die farblosen und roten Schwefelbakterien des Süss- und Salzwassers. (The colorless and red sulfur-bacteria of fresh and salt waters.) In: KOLKWITZ, R., ed. Pflanzenforschung. (Plant Investigations.) Vol. 2. 156 p. 2 pl., 10 fig. Jena, 1924.] Arch. Protistenk. 51: 206-207. 1925.

5255. PRINGSHEIM, E. G. [Rev. of: KOSTKA, G. Praktische Anleitung zur Kultur der Mikroorganismen. (Practical directions for the culture of microorganisms.) 172 p. 141 fig. Stuttgart.] Arch. Protistenk. 51: 205-206. 1925.

5256. RAHN, O. Versuch einer natürlichen Gruppierung der Bakterien. [A natural grouping of bacteria.] Centralbl. Bakt. II Abt. 50: 273-293. 2 fig. 1920.

5257. SOCIETY OF AMERICAN BACTERIOLOGISTS, COMMITTEE ON BACTERIOLOGICAL TECHNIC. Manual of methods for pure culture study of bacteria, for use with the descriptive chart of the Society of American Bacteriologists. 48 p. The Society: Geneva, New York, 1923.

5258. STEARN, E. W., B. F. STURDIVANT, AND A. E. STEARN. The life history of a micro-parasite isolated from carcinomatous growths. Proc. Nation. Acad. Sci. [Washington, D. C.]

11: 662-669. 8 fig. 1925.—Human carcinomatous tissue and its extract were found to contain a minute filter-passing spirillum, which was not found in nearly 500 specimens of non-carcinomatous tissue examined. Cultures indicate a complicated life history, including rods, thread-like forms, cocci and large bodies indicating endospore formation, these forms varying greatly in size. "A pure culture of each stage can be obtained on solid media when conditions, i.e., media and aqueous tension, are held constant."—Howard B. Frost.

5259. THORBJØRNSSEN, S. *Anvendelsen af en modifieret et Giemsa-Farvning til Paavisning af Abortbaciller i Efterbyrds materiale.* [Use of a modified Giemsa stain for demonstration of *abortus bacilli* in placenta.] Kgl. Vet. Landbohsk. Aarsskrift 1925: 12-16. 1 col. pl. Copenhagen, 1925.—A diagnostic method is outlined to differentiate *Bacillus abortus* from coccus or pyogenic colonies in placental material, which is frequently received in an early state of putrefaction. Placental material is smeared on a slide, air-dried, fixed with methyl alcohol 10 minutes, stained 15 minutes with Giemsa azur-eosin (30 drops in 10 cc. distilled water), differentiated in 1% acetic acid, rinsed in distilled water, and air-dried. The pink decidua cells with colonies of light blue bacteria are easily distinguished with a low-power lens, and with oil-immersion they differentiate well from the violet nuclei and dark blue gram-positives.—Ernst Gram.

5260. VEILLON, R. *Sur quelques microbes thermophiles strictement anaërobies.* [Some thermophilic strictly anaërobic bacteria.] Ann. Inst. Pasteur 36: 422-438. Fig. 1-4. 1922.—Three different species of bacteria, designated as Thermo α , β , and γ , respectively, have been isolated from manure by the use of anaërobic methods. These 3 species are strictly anaërobic, failing to develop under aërobic conditions, and are also thermophilic, or heat tolerant. All 3 are able to make some growth at temperatures of 20°-58°C., temperatures higher than 58° being lethal and 50°-55°C. being optimum. Thermo α is sporulating; the other 2 are non-spore formers. They are not pathogenic. Complete morphological and physiological descriptions of the 3 species are given.—A. G. Plakidas.

5261. VIOLE, H. *Le microbe de la gomme du sucre.* [The sugar gum bacterium.] Ann. Inst. Pasteur 36: 439-454. Fig. 1-6. 1922.—From most sugar containing materials, such as figs, dates, sugar beets, sugar cane, and many of their derivatives, such as sirups, molasses, etc., there can easily be isolated a coccus which can transform clear sugar solutions to opaline, viscous, gummy liquids. A detailed description of its morphological and cultural characteristics is given. Orla-Jensen includes it among the *betacocci*. Van Tighem, who was the first (1877) to culture this organism, named it *Leuconostoc mesenteroides*. It is not pathogenic.—A. G. Plakidas.

5262. WALTON, J. H. *Preliminary investigations in the bacteriology of milk.* Agric. Res. Inst. [Pusa] Bull. 159. 1-14. Pl. 1. 1925.

5263. WEISE, OTTO. *Beiträge zum serologischen Nachweis v. Bacillus paratyphosus B und enteritidis Gärtner b. d. bakteriolog. Fleischschau.* [Contributions to the serological demonstration of *Bacillus paratyphosus B* and enteritidis Gärtner in the bacteriological inspection of meat.] (Diss. Leipzig. 1921.) 31 p. Gustav Fock: Leipzig, 1922.

MYXOMYCETES

5264. JØRGENSEN, E. A. *Mykologiske Notitser 1 og 2.* [Mycological notes 1 and 2.] Bot. Tidsskr. [København] 38: 434-438. 2 fig. 1925.—The first note is a description of the sclerotium of *Badhamia utricularis*, which was found in nature; hitherto it was only produced in culture by Lister (1888). The multinucleated sclerotiospores, development of the plasmodium from them, the appearance, structure, and cellulose-digesting power of the plasmodium and the reappearance of the sclerotia are briefly described. *Badhamia* was only once before recorded in Danish botanical literature, over 100 years ago.—For the 2nd note some rare Danish fungi are mentioned: *Dictydialthium plumbeum*, *Pitya vulgaris*, and *Pitya cupressi*.—Author.

PALEOBOTANY AND EVOLUTIONARY HISTORY

EDWARD W. BERRY, *Editor*

(See also in this issue Entries 4513, 4677, 4681, 4710, 4711, 5024, 5556)

5265. AUER, VÄINÖ. Die postglaziale Geschichte des Vanajavesisees. [The postglacial history of the Vanajavesi-lake.] Comm. Inst. Quaest. Forest. Finlandiae 8. 1-156. 20 pl., 21 fig., maps. 1924.—The author describes the different phases in the history of Vanajavesi, which were evoked by the geological development of Southern Finland. This description being founded on peat-stratigraphical researches effected in exact relation to geological and archaeological determinations of time, the exact foundation for geological investigations on peat in Finland has been elaborated by the author. This foundation he proposes to make use of in researches already commenced on the development of the peat lands in Ostrobothnia and in Northern Finland. The methods of research hitherto used for ascertaining the sequence of these peat lands have been further developed here.—Y. Ilvessalo.

5266. BERRY, EDWARD W. The age and affinities of the Tertiary flora of western Canada. Proc. Nation. Acad. Sci. [Washington, D. C.] 11: 671-673. 1925.—The "Kenai" floras of Alaska and Heer's "Miocene" of Arctic Canada have been shown to be upper Eocene or Oligocene, or both. The fossil plants briefly discussed in this preliminary paper are also late Eocene, or possibly in part Oligocene; they include both broad-leaf hardwoods and conifers. Contrary to a general impression, none of these Tertiary floras of western and northwestern Canada and Alaska were tropical in character. The Eocene floras of western Canada show much resemblance to existing species of forested upland China; they are considered to include 2 main elements, of which the younger and major "entered North America from Asia during the Upper Cretaceous or the earlier Eocene by way of land connections in the Bering Sea region."—Howard B. Frost.

5267. BROCKMANN-JEROSCH, H. Fundstellen von Diluvialfossilien bei Lugano. [Deposits of diluvial fossils at Lugano.] Beibl. Vierteljahrsschr. Naturf. Ges. Zürich 68: 1-7. 1923.—Describes the localities where the fossils were found and gives a list of 16 species identified.—John H. Schaffner.

5268. DEPAPE, G. La flore des grès landéniens du Nord de la France. [Flora of the Landenian sandstone of northern France.] Ann. Soc. Géol. Nord 50: 10-48. Pl. 1. 1925.—A revision of the Paleocene floras of northern France representing the vegetation which grew along the retreating shores of the earliest submergence of the Eocene in this region. The flora, as revised, comprises a single fern (*Lygodium*), a conifer (*Doliosirobus*) considered to represent an extinct type of Araucariales, 2 monocotyledons (*Sabal*, *Posidonia*), and 12 dicotyledons representing the genera *Myrica*, *Comptonia*, *Dryophyllum*, *Pasaniopsis*, *Cinnamomum*, *Laurus*, *Sterculia*, *Oreopanax*, *Myrtophyllum*, and *Leptospermites*. There is a very considerable resemblance between this flora and that of the lower Eocene of southeastern North America.—E. W. Berry.

5269. DEPAPE, GEORGES. Végétaux fossiles des Argiles à Poissons de la Chaussairie et de Lormandière à Chartres (Iles-et-Vilaine). [Fossil plants of the fish clays of Chaussairie and Lormandière in Chartres.] Bull. Geol. & Mineral. Bretagne 5: 32-49. Pl. 4-6. 1924.—An interesting account of the fossil plants found in the sapropelic dark clays with abundant fish remains, supposed to have been deposited in a lower Miocene lake called Lake Chartres. These comprise oogonia and vegetative fragments of *Chara*; rhizomes, leaves and seed of *Nymphaea*; undoubted leaves, and supposed fragments of carpels and akenes of *Nelumbium*; abundant seed of *Brasenia*. Lake margin monocotyledons are represented by fragments of linear, parallel veined leaves, and by seed described as *Carpolithes lormandierensis*. Terrestrial plants are represented by leaf fragments which are tentatively referred to the genera *Zelkova* and *Cornus*. These clays are unconformably between the Chattian (upper Oligocene) and Helvetian (middle Miocene) and are supposed to belong to the Aquitanian stage (lower Miocene).—E. W. Berry.

5270. ERDTMAN, G. Studies in the micropaleontology of postglacial deposits in northern Scotland and the Scotch Isles, with especial reference to the history of the woodlands. Jour. Linn. Soc. Bot. London 46: 449-504. Pl. 41 (map), fig. 1-20. 1924.

5271. GORDON, W. T. The structure and relationships of the genus *Pitys*. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 445-446. 1925.

5272. GOTHAN, W. Gemeinsame Züge und Verschiedenheiten in den Profilen des Karbons der paralischen und limnischen (Binnen-) Kohlenbecken. [Common principles and differences in the sections of the Carboniferous of the paralic and limnetic coal basins.] Zeitschr. Deutsch. Geol. Ges. Monatsber. 77: 391-404. 1925.—Two groups of deposits appear in the sections of the Carboniferous of Europe: one of terrestrial deposits formed beside the sea (paralic), in which marine sediments occasionally appear; the other of marsh deposits (limnetic) formed inland and entirely lacking marine sediments. The chief similarity between the two is the presence of a paleontologic break between the lower and the middle Carboniferous. A peculiarity of the paralic deposits is that they seem to terminate at a common horizon in the upper part of the Westphalian stage. The limnetic deposits began much later than the paralic and continued through the Westphalian into the Stephanian stage. These similarities and differences should be useful in correlating the Carboniferous formations of central Europe.—*Roland W. Brown*.

5273. GOTHAN, W. Neue Funde fossiler Flora aus Thüringen. [New Finds in the Fossil Flora of Thuringia.] Zeitschr. Deutsch. Geol. Ges. Monatsber. 77: 251-252. 1925.—New localities in the Rothliegende (Permian) of Thuringia near Manebach and Friedrichroda have furnished a large number of fossil plants. A consideration of these will modify and amplify Potonie's earlier lists. The most remarkable discovery, at Friedrichroda, was *Gomphostrobus bifidus* with many attached sporophylls associated with short branches of *Walchia piniformis*. This suggests to the author that perhaps a new group of gymnosperms is indicated.—*Roland W. Brown*.

5274. HESS, FRANK L. The age of the earth. Sci. Monthly 20: 597-602. 1925.—The red woods, 6000 years old, show that the valleys in which they grow have changed but little during that time. The ancestors, perhaps several generations back, of these redwoods are found petrified in the Miocene at Florissant, Colorado. Diatom deposits at Lompoc, California form beds 1800 feet thick, and probably took 350,000 years of Miocene time for their production.—*A. M. Taylor*.

5275. JEFFREY, E. C. The present status of the biogenetic law. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 446-447. 1925.

5276. KIDSTON, ROBERT. Fossil plants of the carboniferous rocks of Great Britain. Mem. Geol. Surv. Great Britain (Palaeontology) 2 (Pt. 1): 1-109. Pl. A-E + 1-12, fig. A + 1-7, 1923; 2 (Pt. 2): 110-198. Pl. 13-47, fig. 8, 1923; 2 (Pt. 3): 199-274. Pl. 48-68, fig. 9-16, 1923; 2 (Pt. 4): 275-376. Pl. 69-91, fig. 17-31, 1923; 2 (Pt. 5): 377-522. Pl. 92-122, fig. 32-60. 1924.—Following the introduction which includes a historical sketch, the author discusses the British Carboniferous rocks, and the ferns and fern-like plants, and then proceeds to descriptions of species, which take up the greater part of the monograph.—New species and genera named and described by the author are as follows, the geological series in each case being indicated: Part 1: *Sphenopteris Arberi*, and *S. flabellifolia* (Lanarkian), *S. filiformis* (Calceiferous sandstone), *S. pseudo-furcata*, and *S. Fentoniana* (Westphalian), and *S. Taitiana* (Carboniferous limestone).—Part 2: *Adianites Bondi* and *A. Wardi* (Westphalian), *A. tenellus* (Lanarkian); *Sphenopteridium speciosum* (Calceiferous sandstone); *Sphenopteris amoenaeformis*, *S. Lanarkiana*, and *S. quadriloba* (Lanarkian); *S. Cantiana*, *S. corifolia*, *S. Derbiensis*, *S. Moyseyi*, *S. Selbyensis*, *S. Stonehousei*, *S. truncata*, and *S. Vernoni* (Westphalian); *S. clavigera*, and *S. mira* (Carboniferous limestone); *S. cymbiformis*, and *S. Kirkbyi* (Calceiferous sandstone); and *S. Pecopteroides*, and *S. Sewardi* (Radstockian).—Part 3: *Palaeopteridium* n. gen.; *Rhacopteris dichotoma*, and *R. robusta* (Calceiferous sandstone); *Rhodea Smithi* (Calceiferous sandstone); *R. Feistmanteli* (Carboniferous limestone), *R. Eltringhami* (Westphalian), and *R. sparsa* (Lanarkian).—Part 4: *Boweria minor* (Westphalian); *Alloiopteris Radstockensis* (Radstockian); *Renaultia Hemingwayi* (Staffordian); *Myriothea anglica* (Westphalian); *Coseleya Barkeri* (Westphalian); *Ootheca globosa* (Calceiferous sandstone); *Radstockia* n. gen.; and *Hymenotheca Potonié* emend., and *H. acuta* (Westphalian).—Part 5: *Dactylothea Sturi* pro var. (Carboniferous limestone), *D. parallela* (Lanarkian); *Zeilleria hymenophylloides* (Westphalian); and *Telangium digitatum* (Lanarkian).—(See also Bot. Absts. 13, Entry 5214.)—*Frederick V. Rand*.

5277. KODAIRA, RYOJI. Note on a new species of *Schizoneura* from Chosen (Korea). Japanese Jour. Geol. & Geog. 3: 163-165. Pl. 23. 1924.—The author describes *Schizoneura heianensis* from the Kaisen coalfield in Korea, from beds of older Mesozoic age (Heian system).—E. W. Berry.

5278. KRÄUSEL, R. Der stand unserer Kenntnisse von der Tertiärflora Niederländisch-Indien. [Our present knowledge of the Tertiary flora of the Dutch East Indies.] Verh. Geol.-Mijnb. Genoot. Nederl. Koloniën 8: 329-342. 1925.—The author gives an enumeration, with some critical comments, of the fossil plants described by Goeppert, Crie, and himself from Java; those described from Borneo and Labuan by Geyler; those from Bangka by Warburg; and those described from Sumatra by Heer, Ettingshausen, Tobler, and himself.—E. W. Berry.

5279. LECLERCQ, SUZANNE. Introduction à l'étude anatomique des végétaux houillers de Belgique: Les coal balls de la couche Bouxharmont des charbonnages de Wérister. [Introduction to the anatomy of the Carboniferous plants of Belgium: The coal balls of the Bouxharmont bed of the mines of Wérister.] Mém. in 4° Soc. Géol. Belg. 1924-1925: 1-80. Pl. 1-49. 1925.—The text of this work comprises the following 9 chapters: (1) Geology, stratigraphy, and chemical composition of the coal balls; (2) Calamites; (3) Sphenophyllales; (4) Lepidodendraceae; (5) Stigmaria; (6) Zygopteriacae; (7) Botryopteriacae; (8) Specimens from other localities; and (9) Conclusions. The calamites comprise the 2 stem types, *Arthropitys* and *Arthrodendron*, and the *Calamostachys* cone type. The Sphenophyllales described are *Sphenophyllum plurifoliatum* Williamson, *S. Gilkineti*, a new species, and homosporous cones attributed to *S. Dawsoni*. The Lepidodendraceae include *Lepidodendron selaginoides* Carr., *Lepidophloios fuliginosus* Williamson, leaves, cones, a *Lepidocarpon*, and megaspores of *Bothrodendron mundum* Williamson. The Stigmarias include some fine examples of the familiar *Stigmaria ficoides* Sternb., *S. Bacupensis* Williamson, which is regarded as distinct, and *S. Lohesti*, a new species. The Zygopteriacae are *Etapteris Scotti* Bertr., *E. Lacatlei* Renault, *Ankyropteris bibractensis* var *westphaliensis* Bertr., *A. corrugata* (Williamson), and *Stauropteris oldhamia* Binney. The Botryopteriacae are *Botryopteris ramosa* Williamson, *B. cylindrica* Williamson, and *Botryopteris* sporangia. Stems of the Pteridosperm *Lyginopteris* are recorded from Wérister, and a fine specimen of *Lepidodendron Harcourtii* Witham from Flénu in the Mons basin is figured. The following are listed, but not described, from Jupille: *Arthropitys*, *Lepidodendron*, *Stigmaria*, *Stauropteris*, *Bothrodendron*, and *Lyginopteris*.—E. W. Berry.

5280. LEMOINE, MME. P. Étude de quelques Nullipora de Millet et de Michelin. [A study of the species of Nullipora of Millet and Michelin.] Compt. Rend. Cong. Soc. Savantes 1923: 178-185. 1923.—The earlier authors described the Melobesias under the genus *Nullipora*. This author discusses their work and restudies the species of Millet and Michelin with the following results: *Nullipora tuberosa* Mich. of the Pliocene of Asti, Italy, becomes *Lithophyllum tuberosum*; *N. florea-brassica* Millet becomes *Lithothamnium florea-brassica*; *Nullipora uaria* Mich. becomes *Lithophyllum? uaria*. It and the preceding are characteristic of the Miocene shell marls of Touraine. *Nullipora granulosa* Mich. of the Miocene of the Paris basin is shown to be a non-organic concretion. *Nullipora lycoperdioides* Mich. of the Cretaceous of the Sarthe is shown to be the same as *Archaeolithothamnium cenomanicum* Rothpletz, which hence becomes *Archaeolithothamnium lycoperdioides* (Mich.) Lemoine.—Author.

5281. LODGE, OLIVER. Evolution. Nature 116: 939-942. 1925.—This is from the Huxley Lecture at Charing Cross Hospital on December 3. The concept of evolution is discussed particularly with reference to radiation.—O. A. Stevens.

5282. MURAKAMI, H., T. SAKAMOTO, O. AOJI, AND T. OHBA. A typical Paleozoic group in South Manchuria. Japanese Jour. Geol. & Geog. 3: 59-64. 1924.—In this paper a considerable number of fossil plants are listed from the coal-bearing lower Permian of southern Manchuria.—E. W. Berry.

5283. POSTHUMUS, O. Some remarks concerning the classification and the nomenclature of the Inversicatenales. K. Akad. van Wetenschappen. Amsterdam Proc. Sect. Sci. 27: 834-838. 1925.—The author, who has been preparing a catalogue of the primitive fern plants

of the Paleozoic for the Fossilium Catalogus, gives some of the conclusions of this survey here. He advocates the use of the term, "Inversicatenales," of Bertrand and Cornaille (1904) to replace "Primofilices" and "Coenopterideae" as a group term, and the restriction of the Botryopteridaceae to comprise *Botryopteris* and its allies. Five families of Inversicatenales are recognized: Botryopteridaceae, Dineuroidaceae, Clepsydropsidaceae, Zygopteridaceae and Stauropteridaceae. A new genus, *Silesiopteris*, is proposed for *Glyopteris sinuosa* Goepfert.—*E. W. Berry.*

5284. SCHAFFNER, JOHN H. **Main lines of evolution in Equisetum.**—II. *Amer. Fern Jour.* 15: 35-39. 1925.—*Equisetum* like other vascular plants shows a series of changes from little to much specialization in the spore producing structure. Arrangement of the species on this basis places *E. xylochaetum* and *E. giganteum* as the lowest of the series and *E. telmateia* and *E. arvense* as the highest.—*E. R. Walker.*

5285. TROXELL, E. L. **Fossil logs and nuts of hickory.** *Sci. Monthly* 21: 570-572. *Fig. 1-3.* 1925.—Fossil hickory nuts were discovered in northwestern Nebraska in the Titanotherium beds of the Oligocene by Dan Jordan about 25 years ago. The author revisited the locality and found many nuts and fossil logs in a very limited section, indicating that the nuts were all from 1 tree. Associated animal remains suggest that the Oligocene may not have been as arid as some suppose. A very brief history of *Hicoria* and its geographical distribution is included.—*A. M. Taylor.*

5286. WALTON, JOHN. **On some South African Fossil Woods.** *Ann. South African Mus.* 22: 1-26. *Pl. 1-3.* 1925.—The author gives detailed accounts of the following species: *Dadoxylon arberi* Seward from the lower Beaufort beds (Permian); *Rhexoxylon priestleyi* Seward from the Molteno beds (Triassic); *Dadoxylon sclerosum* n. sp. from the Molteno beds, doubtfully from the Stormberg beds, and still more doubtfully from the Ecce or Dwyka beds; *Phyllocladoxylon capense* n. sp. from the Cretaceous or Tertiary of Sunday River; and *Spiroxylon africanum* n. gen., n. sp., probably belonging to the Taxoideae, from the Cretaceous or Tertiary of Harmsfontein. The *Rhexoxylon* is especially noteworthy since it is more completely described and since the type came from the Beacon sandstone of Antarctica, which hence appears to be at least in part of Triassic age. The author suggests that *Pityosporites antarcticus* Seward represents a crushed stone cell of *Rhexoxylon*.—*E. W. Berry.*

5287. WHITE, DAVID. **Coal.** *Sci. Monthly* 21: 177-181. 1925.—A general description of the method of preparing coal sections for microscopic examination, with their appearance under the microscope, is given. Spores of club mosses and ferns and pollen of many kinds, leaves and resins have been fossilized together with other plant parts. The wide distribution of Carboniferous plants is a key to former growth conditions. The writer discusses the process of coal formation in different regions and coal as a source of power.—*A. M. Taylor.*

5288. WHITE, DAVID. **Upper Paleozoic climate as indicated by fossil plants.** *Sci. Monthly* 20: 465-473. 1925.—From the structures and growth habits of the fossil plants found in the deposits of the upper Paleozoic the probable climatic conditions during that time are deduced. The author considers our present period to be one of maximum uplift. As a result of abnormal topographic features we have extremes of climate. The need for adjustment to such extremes has been the stimulus to organic evolution.—*A. M. Taylor.*

5289. YEHAHA, S. **On the Trigoniasandstone group in the Katsuragawa Basin containing Ryoseki plants.** *Japanese Jour. Geol. & Geog.* 3: 79-86. *Pl. 18.* 1924.—In the course of the author's account of the geology of this area in Japan, various fossil plants (so-called Wealden) are listed and shown to be associated with Neocomian invertebrate fossils.—*E. W. Berry.*

PATHOLOGY

FREEMAN WEISS, *Editor*

(See also in this issue Entries 4444, 4446, 4457, 4462, 4467, 4475, 4483, 4494, 4498, 4632, 4720, 4722, 4733, 4781, 4788, 4792, 4854, 4859, 4875, 4879, 4897, 4899, 4900, 4902, 4911, 4917, 4927, 4942, 4961, 5016, 5017, 5027, 5087, 5138, 5141, 5154, 5155, 5163, 5184, 5199, 5201, 5220, 5222, 5224, 5229, 5230, 5231, 5242, 5259, 5403, 5425, 5456, 5466, 5474, 5484, 5539, 5765)

DISEASES CAUSED BY FUNGI

5290. ANDERSON, P. J., AND A. VINCENT OSMUN. The smut disease of onions. Massachusetts Agric. Exp. Sta. Bull. 221. 1-29. 1924.—This is a record of 6 years' experiments on control of smut—the most destructive disease of onions in New England; and an account of its origin, history, and economic importance. The development of the causal organism, *Urocystis cepulae*, and its relation to environmental factors are also discussed. The moisture condition of the soil and soil temperature were found to be unimportant factors. Injury due to formaldehyde treatment was found to vary inversely as the percentage of moisture in the soil. The disease could be safely controlled by the use of 1 gallon of formaldehyde in 50 gallons of water applied at the rate of 50 gallons per acre if the soil is dry, 62½ gallons per acre if the soil is medium moist, and 83½ gallons per acre if the soil is wet and heavy. A new type of formaldehyde tank for the onion seed drill is described. Promising results were also obtained with Uspulun and Germisan.—William L. Doran.

5291. BARSS, H. P., AND H. C. STEARNS. The green muscardine fungus (*Oospora destructor* (Metschn.) Delacroix) on European earwig and other insects in Oregon. (Abstract.) Phytopathology 15: 729. 1925.

5292. BERNARD, CH. De Grijze Dadapschimmel (*Septobasidium bogoriense*). [The gray *Erythrina* fungus.] Thee 6: 82-85. 1925.—*Crotalaria anagyroides* can be seriously attacked by this fungus, but only if it is repeatedly pruned, when it is also often attacked by "djamoer oepas" (*Corticium salmonicolor*). If used as hedges between tea plants, and not left permanently it suffers no serious injury. The fungus is everywhere present and is sometimes frequent on tea where it rarely does damage except in very moist weather and in combination with red rust (*Cephaleuros*).—Carl Hartley.

5293. BOYCE, J. S. A study of decay in Douglas fir in the Pacific Northwest. U. S. Dept. Agric. Dept. Bull. 1163. 1-19. 8 pl. 1923.—The 4 principal decays in Douglas fir (*Pseudotsuga taxifolia*) in the Pacific Northwest are conk rot (*Trametes pini*), butt rot (*Polyporus schweinitzii*), brown trunk rot (*Fomes laricis*) and yellow-brown trunk rot (*Fomes roseus*). Decays caused by *T. pini* and *F. laricis* are found throughout the trunk, while *P. schweinitzii* is usually confined to the butt and *F. roseus* to the top. Of the 44.9% of decay by board foot volume in the trees studied, *T. pini* is responsible for 38.4%, *F. laricis* for 2.7%, *P. schweinitzii* for 2.1%, *F. roseus* for 1.6%, and unknown fungi for 0.1%. Almost 90% of the decayed volume resulted from infections through knots; mechanical injuries are, therefore, of little consequence in the entrance of decay. The volume of decay caused by *Trametes pini* can be approximated with some accuracy in stands of living trees, owing to the abundant development of both abortive (swollen knots) and normal sporophores.—Author.

5294. BOYCE, J. S. Decays and discolorations in airplane woods. U. S. Dept. Agric. Dept. Bull. 1128. 1-51. 7 col. pl., 9 fig. 1923.—The most important woods and their substitutes used in airplane construction are briefly discussed. Among these, spruce, Douglas fir, Port Orford cedar, oak, ash, and birch are particularly considered. General defects such as diagonal or spiral grain, low specific gravity, compression wood, injury by steaming and bending, injury by seasoning, compression failures, shakes, pitch pockets, worm holes, and faulty design and assembly are briefly treated. That is, the variations in color between species and within species, natural changes in color, color in relation to strength, discolorations caused by wounds such as result from lightning or sapsuckers, discolorations of a chemical nature and those caused by fungi, are discussed in detail. The last type is treated under 2 heads: Those caused (1) by staining fungi and (2) by wood destroying fungi. The former do little or no actual harm other than render the infected wood unsightly. Stains caused by *Ceratostomella* spp.,

Fusarium roseum and *Zythia resinæ* are discussed. Wood-destroying fungi weaken the wood; incipient stages can usually be detected by color changes. Decays caused by *Trametes pini*, *Polyporus sulphureus*, *P. schweinitzii*, *P. amarus*, *Fomes laricis*, *Echinodontium tinctorium*, *Fomes frazinophilus*, *F. igniarius*, *Polyporus dryophilus*, *Stereum subpileatum*, *Merulius lacrymans*, *Lenzites sepiaria*, *Polystictus versicolor*, *Stereum hirsutum*, and *Polyporus adustus* are discussed. Decay in finished airplanes can be prevented by storage under dry conditions.—There is a bibliography of 75 titles.—*Author*.

5295. CALDIS, P. D. A rot [*Fusarium moniliforme* Sheldon] of *Calimyrna* fig in California. (Abstract.) *Phytopathology* 15: 728. 1925.

5296. CAVADAS, D. S. La situation phytopathologique au Pelion (Grèce). [Phytopathological situation at Pelion, Greece.] *Rev. Path. Vég. et Entomol. Agric.* 12: 164-180. Fig. 1-2. 1925.—Among fungus pests, *Plasmopara viticola*, *Phytophthora infestans*, *Fusicladium dendriticum*, and others are listed. *Bacterium Savastanoi* is reported on tobacco.—*Cycloconium oleaginum* was demonstrated to penetrate within the cells of the leaf parenchyma, as well as within phloem tissues of petioles.—*J. Dufrenoy*.

5297. CLAYTON, E. S. A common source of infection with flag smut. *Agric. Gaz. New South Wales* 36: 860. 1925.—Wheat straw fed to horses serves as a source of field infection. The feeding of oat straw is suggested.—*L. R. Waldron*.

5298. COSTANTIN, J. Un cas insoupçonné de pathologie végétale. [An unsuspected instance of a plant disease.] *Compt. Rend. Acad. Sci. Paris* 181: 485-488. 1925.—The author describes a case of parasitism by *Pleurotus Eryngii*, discovered in pot cultures inoculated with the fungus and causing a mortality of 71% on *Eryngium maritimum* and of 10% on *E. campestre*. The inoculated plants developed more slowly. There were 7 plants of *E. maritimum* inoculated, and 8 controls.—*C. H. Farr*.

5299. DICKSON, B. T. The 'black dot' disease of potato. (Abstract.) *Rept. British Assoc. Adv. Sci.* 1924: 452. 1925.

5300. DUCOMET, V. *Plasmopara viticola* sur *Ampelopsis Weitchii*. *Rev. Path. Vég. et Entomol. Agric.* 12: 129-131. 1925.—Mildew is reported for the first time, in southwestern France, on leaves of *A. Weitchii*.—*J. Dufrenoy*.

5301. DUCOMET, V. Quelques observations et expériences sur les rouilles des céréales. [Cereal rusts.] *Rev. Path. Vég. et Entomol. Agric.* 12: 124-129. 1925.—Uredospores of *Puccinia glumarum* are often to be seen between the hairs of wheat seeds, and these may germinate even though they be more than 220 days old. Mechanical cleaning of seed is advocated to prevent contamination of wheat seedlings.—Teliospores of *P. Triticina* from rusted stems of wheat which had wintered in the field could readily infect *Thalictrum* and æcidia were obtained within 18 days.—*J. Dufrenoy*.

5302. EFTIMIOU, MILE. PANCA. Sur l'*Exoascus deformans* (Berk.) Fuck. *Compt. Rend. Acad. Sci. Paris* 181: 1085-1087. 1925.—A study is made of the cytology of the fungus in the peach leaf, and the modifications of the leaf in response to the parasite. Filaments of the fungus occur under the cuticle and in the intercellular spaces. The cells are at first plurinucleate, but those on the surface of the leaf later become divided into binucleate cells, which operate in karyogamy, and ultimately produce the asci. Meanwhile the tissues of the host proliferate by cell division involving amitosis. The chloroplasts become transformed into starch and the chondriosomes disintegrate. The parasite does not seem to interfere with the formation of tannin.—*C. H. Farr*.

5303. FAULL, J. H. Forest Pathology. In: Report of Forestry Branch, 1921. *Rept. Minister Lands and Forests, Ontario* 1921: 259-266. Fig. 1-4. 1922.—Observations on the needle blight of white pine were continued in the Temagami Forest Reserve and confirmed previous conclusions. Reddening of the leaves is due to the death of part of the absorbing roots which, in turn, is ascribed to a drying-out process in shallow soils during drought periods. It is probable that other species are similarly affected.—In the course of a general investigation of butt rots of conifers a root and butt rot of spruce, hemlock, and white pine has been observed for the first time. With this decay, which is of the type caused by *Trametes pini*, a stalked polypore (*Polyporus tomentosus*) is constantly associated.—In the author's preliminary account of the true tinder fungus (*Fomes fomentarius*) he states that, instead of causing a sap

rot as commonly supposed, this fungus seems invariably to appear first in the heartwood.—Poplar canker (*Dothichiza populea*) has been observed near Toronto causing much damage to Lombardy poplars.—A. W. McCallum.

5304. FAULL, J. H. Forest Pathology. In: Report of Forestry Branch. 1922. Rept. Minister Lands and Forests, Ontario, 1922: 245-254. Fig. 5-9. 1923.—“Red branch” of balsam fir, pine, and cedar due to injury by *Monohamus* spp. late in the season is described.—Preliminary descriptions of 5 types of decay in balsam fir are given. A butt rot similar in character to that presumed to be caused by *Polyporus schweinitzii* has been connected with *Polyporus balsameus*.—A list of the rusts of balsam fir occurring in the Temagami Forest Reserve is appended; this includes 2 new species described by Bell—*Peridermium pycnogrante* and *P. pycnoconspicuum*.—A. W. McCallum.

5305. FAULL, J. H. Forest Pathology. In: Report of Forestry Branch. 1923. Rept. Minister Lands and Forests, Ontario, 1923: 197-207. 1924.—Red heart rot of balsam fir, a decay long known to lumbermen but to which attention of scientists has but recently been drawn, is described. It is by far the most serious rot affecting this species. Field observations and laboratory studies have shown that the causal fungus is *Stereum sanguinolentum*.—Six different types of defective balsam fir and 4 of spruce are described and their relation to utilization as pulpwood is discussed.—The fern rust (*Hyalopsora aspidiotus*) has been proved to have its alternate stage upon 3-year-old leaves of balsam fir.—A. W. McCallum.

5306. GARDNER, MAX W. Cladosporium leaf mold of tomato: Fruit invasion and seed transmission. Jour. Agric. Res. 31: 519-540. Pl. 1-5, fig. 1. 1925.—A conspicuous, black, stem-rot of both immature and ripe greenhouse tomatoes has been found to be caused by *Cladosporium fulvum* Cke., which also causes blackened radial furrows and lop-sided fruits which tend to remain green or yellow on the retarded side. The mycelium is intercellular and produces composite strands which form a reticulum in which the cavities represent the original host cells. The mycelium tends to accumulate most extensively between the parenchyma cells next to vascular bundles. Sclerotial bodies formed under stomata in sepals, pedicel, and torus and in certain restricted areas on the fruit lesions may bear tufts of conidiophores. Mycelial growth and spore germination occur between 10° and 30°, with an optimum at 20 to 25°C. In an infected fruit the fungus occurs in the pericarp, locule walls, and placentae, invariably it would seem in the torus, and frequently in one or more sepals and in the last internode of the pedicel. No stomata have been found in the fruit. Histological studies and inoculation tests indicate that spore infection occurs rather early through stomata in the sepals, torus or last pedicel internode, after which the mycelium grows down into the fruit. The fungus penetrates as far as but not into the endosperm. Sclerotial bodies are formed at the hilum end of the seed and within the middle layer of the seed coat. Since the seed coat is often carried up on the cotyledons of the seedling, the spores formed thereon may readily reach other seedlings. In germination the cotyledons must emerge through the infected hilum region. Primary cotyledon infection occurred among seedlings grown in pots of sterile sand from both infected and surface-contaminated seed which had been dried 1 month.—Author.

5307. GIBSON, FREDERICK. Sunburn and aphid injury of soybeans and cowpeas. Arizona. Agric. Exp. Sta. Tech. Bull. 2. 42-46. Pl. 2, fig. 1. 1922.—Several varieties of soybeans and cowpeas are injured in summer by sunburn and aphid injury, followed by infection with an *Alternaria* which appears to be undescribed and for which the name *Alternaria atrans* is proposed. Loss of leaves is greatest in Virginia soybean and serious enough to lessen its value for green manure and forage. The Biloxi soybeans are the most resistant of the varieties studied.—H. L. Westover.

5308. HAHN, GLENN GARDNER. Cedar blight caused by *Phomopsis juniperovora* Hahn. U. S. Dept. Agric. Plant Disease Reporter, Suppl. 42. 316-318. Fig. 9. 1925.—The disease appears on young twigs or terminals of nursery seedling, and older ornamental, conifers as a blight. Lesions may extend into the main axis or larger branches of older plants, forming typical cankers. The present known distribution of this fungus includes the Atlantic Seaboard from New York to Florida, throughout the Middle West from Minnesota to Alabama, but not farther west than eastern Nebraska and Kansas. Species of *Juniperus*, *Cupressus*,

Thuja and *Chamaecyparis* (*Retinospora*) are listed as infected. Strains of *Phomopsis* closely resembling *P. juniperovora* are listed on species of *Cephalotaxus*, *Taxus*, *Taxodium*, *Cryptomeria* and *Pseudotsuga*. Positive infections under artificial conditions have been obtained with *P. juniperovora* on *Larix europaea* and *Pseudotsuga taxifolia*, Pacific Coast type. While control measures are not fully worked out, the most promising methods consist in cutting out affected parts, spraying with Bordeaux mixture, and eliminating excessive moisture.—*G. Hamilton Martin, II.*

5309. HURSH, C. R. Sur la toxicité des milieux de culture des champignons phytopathogènes vis à vis des plants. [Toxicity of nutrient media in which phytopathogenic fungi were grown, towards plants.] Rev. Path. Vég. et Entomol. Agric. 12: 137-147. 1925.—Wilting was rapidly obtained, as well as discoloration of vascular tissues, when bases of cut leaves or stems were dipped in solutions where phytopathogens had been grown, and filtered out.—In certain cases wilted plants recover when transferred to water, and wilting seems to be due to failure to take up water. It was further demonstrated that wheat stems are able to take up only 1 volume from a filtrate of a culture of *Leptosphaeria herpotrichoides* as compared with 7 volumes from fresh water.—*J. Dufrenoy.*

5310. HYNES, N. J. Investigation by the late C. O. Hamblin into the Helminthosporium disease of wheat. Jour. and Proc. Roy. Soc. New South Wales 57: 160-172. 1923.—The unpublished work of the late Chas. O. Hamblin on the Helminthosporium disease of wheat is reviewed. Pathogenicity tests indicated that the strain of *Helminthosporium* isolated from Marshall's No. 3 wheat at Cowra in Nov., 1920, is a true parasite of the wheat plant, capable of causing a "foot-rot" condition and also lesions on the leaves. Seed from diseased plants when sown gave rise to healthy plants. The "foot-rot" condition was observed at Cowra in 1921 on 150 different wheat varieties belonging to different species of *Triticum*. Spores of *Helminthosporium* were found on Slav rye, Skinless barley, *Hordeum murinum*, *Bromus inermis*, *B. sterilis*, and Spear grass.—(From Australian Science Abstracts.)

5311. JENKINS, ANNA E. Brown canker [of roses] caused by *Diaporthe umbrina* Jenkins. U. S. Dept. of Agric. Plant Disease Reporter, Suppl. 37. 407-409. Fig. 16. 1925.—The earliest collection (1917) of this fungus was made by the author in the District of Columbia. Although first observed in the form of stem cankers the disease has since been found on all parts of the plant as well as on cuttings. The range of the disease also includes most of the Atlantic coast states from Massachusetts to Georgia as well as West Virginia, Kentucky and Mississippi. This is one of the most important rose diseases, the horticultural varieties being particularly susceptible to attack. A note on control by spraying is given.—*G. Hamilton Martin, II.*

5312. JENKINS, ANNA E. Polyspora? sp. [on *Rosa hugonis*.] U. S. Dept. of Agric. Plant Disease Reporter, Suppl. 42. 362. 1925.—This fungus, apparently new, is reported on *Rosa* sp. from Virginia and on *R. hugonis* from Maryland, North Carolina and Virginia. On *Rosa* sp. it was associated with purple discolorations on the stem; on *R. hugonis* it produced a definite blight.—*G. Hamilton Martin, II.*

5313. JENKINS, ANNA E. *Ramularia macrospora* Fres. [on *Rosa*]. U. S. Dept. Agric. Plant Disease Reporter, Suppl. 37. 410. 1925.—*Ramularia macrospora*, apparently causing a disease similar in nature to crown canker, is reported on roots and crowns of greenhouse roses.—*G. Hamilton Martin, II.*

5314. LAUBERT, R. Die Krankheit der Yucca. (Disease of Yucca.) Gartenwelt 29: 411-412. 1 fig. 1925. A description is given of *Coniothyrium concentricum*, causing spots on the leaves of *Yucca*, *Dracaena*, *Dasyllirion*, *Fourcroya* and *Agave*. No method of control is known, except removal and destruction of badly infested leaves.—*J. C. Th. Uphof.*

5315. LEHMAN, S. G., AND FREDERICK A. WOLF. A new downy mildew on soybeans. Jour. Elisha Mitchell Sci. Soc. 39: 164-169. Pl. 16-17. 1924.—*Peronospora sojae* n.sp. causes a brown leaf spot, the conidiophores covering its lower surface.—*W. C. Coker.*

5316. LIESE. Bitte um Mitteilung über das Auftreten des Hallimasches. [Request for information on the occurrence of *Armillaria*.] Zeitschr. Pilzkunde 5: 88. 1925.—*Armillaria mellea* was prevalent in German forests in 1925 following a warm dry spring.—*F. Weiss.*

5317. LÖHNIS, MARIE P. Onderzoek naar het verband tusschen de weersgesteldheid en

de Aardappelziekte (*Phytophthora infestans*) en naar de eigenschappen, die vatbaarheid der knollen voor deze siekte bepalen. [Investigations on the relation between weather conditions and the occurrence of potato blight; and on the qualities that determine the degree of susceptibility of the tubers to this disease.] (English summary.) Mededeel. Wetensch. Comm. Advies Onderz. Belang Volkswelv. Weerbaarheid. 129 p., 4 pl., 24 graphs. 1925.—A correlation between meteorological factors and the moment of outbreak or rate of spread could not be traced. The maximum result of spraying with Bordeaux mixture was an increase of 60% above the yield of a control plot. An influence of degree of foliage infection on the yield of sound tubers was noted only when the outbreak was early in summer.—No relation was found between thickness of skin and degree of resistance of tubers; in several varieties resistance appeared to be a function of the cork-cambium. The fungus enters the tubers through lenticels and eyes. A correlation was found between the size of the non-suberised area in the lenticels per tuber and the amount of infection through the lenticels. In tubers grown in sandy soil this area is frequently smaller than in those grown in clay soil. Susceptibility through the eyes increases during the ripening period. The path of entry leads through the outer bud-scales. Resistance of the cork-cambium can be inhibited by ethyl alcohol vapor. Clay-grown tubers are more susceptible to infection by contact with diseased ones than tubers grown in sandy soil. No correlation was traced between the behavior of the stomata and the degree of resistance of the foliage.—*Author*.

5318. MELHUS, I. E., AND FRANK VAN HALTERN. *Sclerospora* on corn in America. *Phytopathology* 15: 720-721. 1925.—*Sclerospora graminicola* is very common on green foxtail (*Setaria viridis*) in Iowa and adjoining states. Plants of *Setaria viridis*, *S. italica*, *Panicum miliaceum*, *Euchlaena mexicana*, and 26 varieties of *Zea mays* were readily infected by placing oospores on the planted seed or in the soil. Infection occurs before the plumule has emerged from the soil. On corn the symptoms are much less conspicuous than on *Setaria*. On the former, conidia are rarely abundant. Only a slight mottling of the leaves may occur, or in severe cases the plants may die early or are dwarfed.—*B. B. Higgins*.

5319. MILES, L. E. A pyrenomycetous leaf spot of bur clover. *Phytopathology* 15: 677-690. Pl. 29-30, 4 fig. 1925.—A spotting of the leaves, leaf petioles, peduncles, and flower parts (including seed) of bur clover (*Medicago maculata*) occurs commonly in the vicinity of Auburn, Alabama. The spots are indefinite in size and in outline, pale yellow to brown in color, and bear minute black to dark-brown specks. Affected leaves may finally turn yellow and drop off, often causing serious defoliation. The disease is produced by a fungus, in morphology and in effect on the host, closely resembling *Pleosphaerulina briosiana* on *Medicago sativa* and *Sphaerulina trifolii* on *Trifolium* sp. It differs, however, in size and septation of spores and also in host range, as shown by inoculation tests. The fungus was isolated and grown in various culture media. Following the classification of von Höhnelt as modified by Petrark, the organism is referred to the genus *Pseudoplea* and is described as *P. medicaginis* n.sp.—*B. B. Higgins*.

5320. OFFNER, JULES, ET ROGER HEIM. A propos du *Pleurote* des *Ombellifères*. [The *Pleurotus* occurring on *Umbelliferae*.] *Compt. Rend. Acad. Sci. Paris* 181: 809-811. 1925.—A discussion of various papers bearing on the parasitism of *Pleurotus Eryngii*, is given. The authors question the interpretation of Costantin as to the existence of such a relationship.—*C. H. Farr*.

5321. OWENS, C. E. A *Tubercularia* canker of Chinese elm. (Abstract.) *Phytopathology* 15: 729. 1925.

5322. RAWLINS, T. E. A myxomycete [apparently *Sorolpidium betae* Nemec] occurring in the smaller roots of beets. (Abstract.) *Phytopathology* 15: 727. 1925.

5323. RAWLINS, T. E., AND R. L. McCLAIN. Tip-burn and "slime" diseases of lettuce in California. (Abstract.) *Phytopathology* 15: 727-728. 1925.—Tip-burn is a physiological disease. Secondary infection by *Botrytis* and bacteria produces the "slime" disease.—*B. B. Higgins*.

5324. RAWLINS, T. E., AND E. H. SMITH. A mycorrhizal fungus in the smaller roots of celery. (Abstract.) *Phytopathology* 15: 727. 1925.—The identity of the organism and its relation to the host have not been determined.—*B. B. Higgins*.

5325. SIEMASZKO, WINCENTY. Pleśń liściowa, *Monilia foliicola* Woronichin w świetle spostrzeżeń i badań biologicznych. [Leaf-blight, *Monilia foliicola* Woronichin in the light of biological observations and investigations.] Acta Soc. Bot. Poloniae 2: 81-98. Pl. 2. 1924.—This presents the morphology and biology of *Monilia foliicola*, described originally by Woronichin, by whom it was found on the Caucasian coast of the Black Sea. The author has found the fungus in the same region and in Poland in the virgin forest of Białoweska Puszcza.—The original hosts were the Caucasian strain of *Pyrus communis*, and *Mespilus germanica*, the present author adding as new hosts, the wild species, *Corylus avellana* and *Alnus glutinosa*. Infection is by contact of infected with healthy leaves, further growth being favored by high humidity. The European variety of *Pyrus communis* and the cultivated hazel-nut were not found to be infected.—The fungus causes irregular brownish, yellowish-gray, or whitespots, sometimes surrounded by a brown margin; they may fuse to cover the entire leaf. In the more advanced stages, especially on pear, indistinct concentric rings are present.—*Monilia*-like chains of spores, which germinate only after exposure to winter conditions, are produced acropetally in cultures,—rarely in nature. Pseudosclerotia are also formed, but germinate only if entire.—Infection is more severe between hosts of the same species, than between different genera, thus indicating a degree of specificity.—The fungus is believed to be a degenerate *Sclerotinia* and is described as *Moniliopsis foliicola* (Woronich.) Siemaszko, with a revised diagnosis.—D. H. Linder.

5326. STAKMAN, E. C., M. N. LEVINE, AND FRED GRIFFEE. Webster, a common wheat resistant to black stem rust. Phytopathology 15: 691-698. 1 fig. 1925.—Webster, a recently named variety of common wheat (*Triticum vulgare*), introduced from Russia by the U. S. Dept. of Agric. is resistant to more of the physiologic forms of *Puccinia graminis tritici* than any other variety of common wheat yet tested. It is relatively resistant to all of the 19 forms with which it has been inoculated, and is also resistant to some forms of *P. triticea*. It is not a desirable variety for commercial growing, but will doubtless be valuable in breeding for rust resistance. It has 42 chromosomes in somatic cells—the same as other varieties of the vulgare group.—B. B. Higgins.

5327. TEHON, L. R., AND EVE DANIELS. A note on the brown leaf-spot of alfalfa. Phytopathology 14: 714-719. 1 fig. 1925.—During recent years a brown leaf-spot of alfalfa has been noted in Illinois, and a careful survey (1924) indicated that it might cause serious damage. The causal fungus is apparently identical with *Macrosporium sarcinaeforme*; but, in the opinion of the authors, this and similar species should not be included under *Macrosporium*. To include them the genus *Thyrospora* n. gen. is erected. A technical description is given with *T. sarcinaeforme* (Cav.) n. comb. as the type species.—B. B. Higgins.

5328. THOMAS, HAROLD E. Observations on the growth of *Armillaria mellea* Vahl in culture. (Abstract.) Phytopathology 15: 729. 1925.

5329. WINGARD, S. A. Studies on the pathogenicity, morphology, and cytology of *Nematospora Phaseoli*. Bull. Torrey Bot. Club 52: 249-290. Pl. 7-9. 1925.—*Nematospora* belongs to the yeasts and has long needle-shaped ascospores; it is parasitic on many plants, especially on the Leguminosae, infection being associated with punctures by certain insects. A study was made particularly of *N. Phaseoli*. Although the vegetative phase is typically yeast-like, a rudimentary mycelium can be induced in water. In ascus formation it is typical of Ascomycetes in so far as spore plasm and epiplasm are concerned. Nuclear divisions in the ascus are typically mitotic. A spindle is formed and 4-5 chromosomes can be distinguished in the equatorial plate stage of the 1st and 2nd divisions. *Nematospora* is apparently rather closely related to *Monospora* and *Coccidiascus*, resembling them morphologically, so that these genera appear to form a natural group under the Saccharomycetes.—P. A. Munz.

5330. ZELLER, S. M., AND LEROY CHILDS. Another apple-tree anthracnose in the Pacific Northwest and a comparison with the well-known apple-tree anthracnose. (Abstract.) Phytopathology 15: 728. 1925.—The causal organism is an unidentified species of *Gloeosporium*.—B. B. Higgins.

5331. ZELLER, S. M., AND ROBT. K. NORRIS. Spur blight (*Mycosphaerella rubina*) of raspberry in Oregon. (Abstract.) Phytopathology 15: 728. 1925.

DISEASES CAUSED BY BACTERIA

5332. DUFRENOY, JEAN. *Les tumeurs de Résineux*. [Tumors of evergreen trees.] *Rev. Path. Vég. et Entomol. Agric.* 12: 102-112. 1925.—As first demonstrated by Erwin F. Smith, tumors were observed to result from slight but continuous alterations of normal metabolism in meristematic tissues.—A tumor results from the fact that at some distance from the stimulating agent a layer of embryonic cells, disposed as a hollow sphere, acts as a cambial layer to yield 2 different types of cells: (1) Centripetally, cells are formed toward the bacterial colonies, the nucleus and plastids of which soon disintegrate, while large tanniniferous vacuoles develop; (2) centrifugally, cells are formed in which the plastids are very active.—Similar differentiation of centripetal tanniniferous tissues and centrifugal active parenchyma may be observed wherever host and parasite occur together for some time, even though there be no resultant tumor.—Differentiation of resin ducts is inhibited in the vicinity of neoplastic tissues while at some distance it is accentuated.—*Author*.

5333. GARDNER, MAX W., AND JAMES B. KENDRICK. *Bacterial spot of cowpea and lima bean*. *Jour. Agric. Res.* 31: 841-863. *Pl.* 1-6. 1925 [1926].—Bacterial spot of cowpea is characterized by reddish brown lesions on leaves, stems, pods, and seeds. The disease on lima bean has been described by Tisdale and Williamson. The hosts include *Vigna sinensis*, *V. catjang*, *V. sesquipedalis*, *Dolichos lablab*, *Stizolobium deeringianum*, *Phaseolus angularis*, *Phaseolus limensis*, *P. limensis* var. *limenanus*, *P. limensis* var. *lunonanus*, and the weed, *Desmodium canescens*. Henderson's Bush Lima bean is somewhat resistant. On cowpeas the young growing organs are most susceptible to infection. Pods may be stunted or deformed. The causal organism, *Bacterium vignae* n. sp., is fully described. *Bacterium viridifaciens* Tisdale and Williamson is synonymous with *Bacterium vignae*. Leaf infection is stomatal. The invasion of the leaf tissue is intercellular and is most extensive in the spongy mesophyll, especially along the veins. Actual vascular invasion may occur in seedlings and young leaves and wilting may result. Cowpea seed from infected pods gave rise to infected seedlings, as did also commercial seed; samples of the latter stored an extra year seemed to be free from infection.—*Authors*.

5334. SWEANY, H. C., AND MAX PINNER. *A pathogenic subtilis bacillus from a patient with chronic tuberculosis*. *Jour. Infect. Diseases* 37: 340-343. 1925.—*Bacillus subtilis* was isolated from many lesions of an infected patient. The organism proved to be pathogenic for white rats.—*R. L. Starkey*.

5335. SWINGLE, D. B. *Center rot of "French Endive" or wilt of chicory (Cichorium intybus L.)*. (Abstract.) *Phytopathology* 15: 730. 1925.—*Phytophthora cichori* and *P. intybi* are both capable of producing center rot.—*B. B. Higgins*.

INFECTIOUS CHLOROSES (MOSAIC, YELLOWS, CURL, ROSETTE, ETC.)

5336. CARSNER, EUBANKS. *A bean disease caused by the virus of sugar beet curly-top*. (Abstract.) *Phytopathology* 15: 731. 1925.

5337. CROSS, WM. E. *The origin of mosaic disease in Cuba*. *Internat. Sugar Jour.* 27: 551. 1925.—Further evidence is offered to show that Argentina was not responsible for introduction of mosaic into Cuba. The disease was prevalent in several districts of Cuba before the introduction of the variety, Java 36, from Argentina. It was the appearance of the disease in the Estacion Experimental Agronomica for which Java 36 was responsible.—*Nellie E. Fealy*.

5338. GRAM, E. *Mosaiksyge hos Korsblomstrende*. [Mosaic in crucifers.] *Dansk Frøavl*. [København] 8: 41-42. 1925.—Mosaic was found in turnip in 1921 but since that year only 8 localities are recorded. Different garden turnips, swedes, *Raphanus*, and *Sinapis arvensis* are susceptible. With severe infection the leaves are crinkled, die prematurely, and a secondary rot of the root may follow. From turnip to turnip the inoculum is carried by mere touching, thus also by farm implements and teams. Eradication measures are proposed.—*Author*.

5339. HARREVELD, PH. VAN. *Gelestrepenziekte en bladuizen*. [Yellow-stripe disease and leaf lice.] (Korte Meded. Proefsta. Java-Suikerindus. No. 4.) *Arch. Suikerindust. Nederl.-Indië* 30: 261-262. 1922.—In amplification of a local newspaper report of April 1st,

stating that the Cheribon Sugar Experiment Station had determined definitely that yellow-stripe is an infectious disease brought over by means of a louse, *Aphis adusta*, the writer notes that 2 species of *Aphis* occur on sugar cane in Java, namely, *A. sacchari*, the green leaf-louse, found everywhere, though not conspicuous, and *A. adusta*, the green or black spotted leaf-louse. The latter is even less numerous than the former and occurs more commonly between the recently unrolled leaves of young shoots or plants. The author remarks that in the experiment station plots where much stripe disease occurred on the very susceptible Chunnee stocks, no *Aphis adusta* was found. In the vicinity of Pasoeroean, however, P. van der Goot, found this aphid on *Zea mays*, and sorghum, and on small grasses, such as *Panicum colore* and *Polytrias diversiflora* (Contrib. Faune des Indes Néerlandaises 1³: 69. 1917.) In the tested method of control of yellow-stripe by selection in the young nursery gardens, it is thought that no change will be necessary. (See also. Bot. Absts. 12, Entry 2657.)—*R. D. Rands.*

5340. ZELLER, S. M. Preliminary reports on transmission of dwarf of loganberry. (Abstract.) Phytopathology 15: 732. 1925.—Preliminary tests indicate that the disease is transmitted by aphids.—*B. B. Higgins.*

DISEASES CAUSED BY ANIMAL PARASITES (INSECTS, NEMAS, PROTOZOANS, ETC.)

5341. ANONYMOUS. Froghopper pest of sugar cane in Trinidad. Internat. Sugar Jour. 27: 585-587. 1925.—For a number of years the froghopper has been a serious menace to sugar cane in Trinidad. Investigations have shown that extreme dryness and humidity at critical periods influence its attacks. In 1906-1908, when infestation was heavy, efforts were made to combat it by increasing the spread of the green Muscadine fungus, which is coexistent with it and doubtless its natural enemy. A permanent committee has been appointed to make a scientific study of the insect with a view to finding means of control. The Government has provided half of the required funds and the other half remains to be provided by the growers. An outline is given of C. B. Williams' investigations of the pest in Trinidad.—*Nellie E. Fealy.*

5342. ANONYMOUS. List of publications on Indian Entomology. 1924. (Compiled by the Imperial Entomologist.) Agric. Res. Inst. [Pusa] Bull. 161: 1-41. 1925.

5343. ALAMO IBARRA ROBERTO. Dos insectos perjudiciales al cultivo del algodónero: el gusano de la hoja y el gusano de la bellota. [Two insects prejudicial to cotton cultivation: The leaf and boll worms.] Caracas, 1925.—The author refers to 2 insect pests which cause important damage to the cotton crop in Venezuela. The zone of maximum abundance is indicated, the insects (*Alabama argillacea* and possibly *Heliothis* sp.) are described and control methods are outlined.—*H. Pittier.*

5344. ESSIG, E. O. The blackberry mite, the cause of redberry disease of the Himalaya blackberry and its control. California Agric. Exp. Sta. Bull. 399. 1-10. 1925.—This mite is injurious only to the Himalaya blackberry. The mites enter the flowers and infest the berries as the drupelets are forming and remain at the base of the berry and about the core, often causing abortion and in the great majority of cases an abnormal reddening. Effective control consists in the application of early spring sprays. Infestations and injuries may be completely checked by the use of summer sprays.—*A. R. C. Haas.*

5345. HAYES, WM. P., AND C. O. JOHNSTON. The reaction of certain grasses to chinch-bug attack. Jour. Agric. Res. 31: 575-583. 1925.—The experimental grass garden at Manhattan, Kansas, containing 85 species of native and cultivated grasses, was subjected to an extremely heavy invasion by chinch-bugs in the spring of 1924, infestation being uniform throughout the plots. It was found that native, perennial species with harsh tissues and of the bunch grass type were only slightly injured. Introduced, annual, or thin-tissued species were in most cases killed or severely injured. The more resistant species such as *Andropogon scoparius*, *Sporobolus asper*, *S. cryptandrus*, *Sorghastrum nutans*, *Elymus virginicus*, *E. canadensis*, *Triodia flava*, *Bouteloua oligostachya*, *B. curtipendula*, and *Eragrostis trichodes* are the most common roadside, pasture and prairie grasses in the vicinity of Manhattan and offer the best winter harbors for chinch-bugs in that locality.—*C. O. Johnston.*

5346. HERRICK, GLENN WASHINGTON. Manual of injurious insects. xxi+489 p. Illus. H. Holt & Co.: New York, 1925.

5347. MARTIN, A. C. An ontogenetic study of the gall, *Phylloxera Caryaseptem*, Shimer. (From Proc. North Carolina Acad. Sci.) Jour. Elisha Mitchell Sci. Soc. 40: 103-109. 1924.

5348. NĚMEC, B. *Untersuchungen über Eriophyidengallen.* [Investigations of Eriophyd galls.] *Studies Plant Physiol. Lab. Charles Univ. [Prague]* 2: 47-94. 3 pl. 1924.—The nature and structure of the galls induced by the following *Eriophyes* are described: *E. Thomasi*, on *Thymus Serpyllum*; *E. padi*, on *Prunus* spp.; *E. tetratrichus*, on leaves of linden; *E. tiliae*; *Phyllocoptes setiger* on leaves of *Fragaria collina*; *E. galii* on *Galium Mollugo*; *E. tetanothrix* and *E. truncatus*, on *Salix purpurea*; *E. tristriatus* on leaves of *Juglans regia*; and *E. tristriatus* var. *erinca*, on *Juglans regia*. Some attention is given to the cytology of certain of these galls. The manner in which the mites derive nourishment from the cells is considered, together with the specific tissues involved and the effects that this feeding has upon the tissues themselves.—P. D. Strausbaugh.

5349. WILKINSON, D. S. *Carpocapsa.* *Cyprus Agric. Jour.* 20: 134-136. 1925.—It is generally known that the larvae of *Carpocapsa pomonella* (codling moth) cause much damage to apples in Cyprus but few know that the insect can be satisfactorily controlled. A Government Order now in force prescribes 3 control measures, namely, (1) annual whitewashing of the main trunk to the 2nd branching in early spring; (2) collection and destruction of fallen fruits; (3) placing of a straw or cloth band around the trees before July 15. These bands serve as winter hibernating places and are to be removed very early in spring and burned, immersed in boiling water, or buried. This order applies to apple, pear, peach, plum, quince and walnut trees.—W. Stuart.

NON-PARASITIC DISEASES

5350. BIRD, MAURICE. *Soil hygiene in its relation to cane "disease."* *Internat. Sugar Jour.* 27: 536-537. 1925.—Samples of withered cane were taken from fields which showed the trouble, and of unaffected cane from fields showing no trace of it. These were divided into roots, stalks, and leaves, which were ashed separately and the Ca: Mg ratios calculated. Analyses of the soils upon which the cane was grown were also made. The conclusion is drawn that withering develops in plants which are in vigorous growth when the soil is stiff and insufficiently provided with vegetable matter and lime.—Nellie E. Fealy.

5351. CHRISTENSEN, H. R. *Om Gulspidssygen og dens Bekæmpelse.* [Yellow tip and its prevention.] *Ugeskr. Landmaend [København]* 70: 561-565. 5 fig. 1925.—Yellow tip is a prevalent disease in oats and is apparently connected with certain humus conditions, but independent of soil reaction. In Denmark it occurs sporadically but more frequently in 2 regions of the peninsula, where the entire crop of oats may be lost in certain localities. It is characterized by white or yellow, whip-like tips of the leaves. The injury resembles frost damage but when samples of the soil are removed to other localities oats sown therein will also contract the disease. Yellow tip is aggravated when the soil is very loose; a dressing with clay has proved beneficial under such conditions. The disease is identical with the "ontginningsziekte" (breaking disease) in Holland, where control by means of a heavy application of town refuse or of CuSO_4 (50-100 kg. per ha.) has been developed. In a recent Danish experiment 60 kg. CuSO_4 broadcast directly before sowing the oats showed a favorable effect, as did town refuse also, though the latter apparently resulted in an excess of N.—Ernst Gram.

5352. EASTHAM, J. W. *An unusual vascular browning of potato tubers as a result of frost.* (Abstract.) *Phytopathology* 15: 731. 1925.

5353. FAULL, J. H. *Forest Pathology.* In: *Report of Forestry Branch 1920.* Rept. Minister Lands and Forests, Ontario 1920: 224-235. 9 fig. 1921.—Continuing a study of white pine needle blight, observations on marked trees indicate that affected trees up to 6 inches in diameter are likely to recover but the death rate in larger trees is much higher and recovery more uncertain and slower. Temperature records show that frost is not a factor in the occurrence of blight.—Winter browning of the foliage of coniferous trees was very prevalent in 1920. In some cases trees were killed outright and in others twigs and small branches suffered as well as the foliage. This injury usually occurs on the south side of the tree and in the lower portion of the crown. It is due to transpiration occurring when the ground is frozen and the roots are unable to replace the water lost.—"Red branch" of balsam fir is ascribed to insect wounding of the bark late in the season, followed by winter frosts.—A twig blight of balsam fir and a canker of poplar are mentioned, together with a preliminary note on heart rots of conifers.—A. W. McCallum.

5354. HARTMAN, HENRY. The control of core break-down in pears. (Abstract.) *Phytopathology* 15: 731. 1925.

5355. MOSSÉRI, VICTOR M. La chlorose de la canne à sucre en Égypte. [Chlorosis of sugar cane in Egypt.] *Bull. Inst. Egypt* 3: 1-12. 1921.—The author was the first to recognize chlorosis of sugar cane in Egypt, observing it in the province of Wadi-Kom-Ombo in Upper Egypt on ancient terraces of the Nile. Upon the appearance of the disease in 1913 it was believed to be due to a lack of available N which may have resulted from a fungus disease or the presence of toxic substances in the soil. Various treatments proved negative but success attended the spraying of affected plants with ferrous sulphate, showing that it was a case of chlorosis due to insufficient absorption of Fe.—The chlorosis problem would seem to have been solved, had not recent soil analyses revealed the absence of any correlation between chlorosis and the content of the soil in lime. The present note, however, treats only the symptomatology and control.—Cane chlorosis, which has never been observed on typical alluvial terraces, breaks out particularly in the ratoon crop in the 2nd year of plantings on silt or silt-clay soils; it is rare in clay soils except when they contain calcareous particles. The malady develops soon after the appearance of the 1st shoots, and is manifested simultaneously in the leaves, roots, and general dwarfed habit.—The author recommends spraying with a solution of 8-10% ferrous sulphate in preference to the application of iron in the irrigation water.—*Author (translated).*

DISEASE CONTROL (SEED TREATMENT, SOIL DISINFECTION, FUNGICIDES, INSECTICIDES, ETC.)

5356. BAILEY, D. L., AND F. J. GREENEY. Preliminary experiments on the control of leaf and stem rusts of wheat by sulphur dust. *Sci. Agric.* 6: 113-117. 1925.—Following the suggestion of Kightlinger (see Bot. Absts. 15, Entry 3888) some preliminary tests were conducted by the Dominion Rust Research Laboratory at Winnipeg in the summer of 1925 to determine the efficacy of sulphur dust with respect to: (a) the number of applications necessary to control rust, (b) the optimum rate of application, and (c) the most effective time of application. Applications were made at the rate of 30 pounds per acre semi-weekly, weekly and fortnightly and at 15 pounds per acre tri-weekly, semiweekly, weekly, fortnightly, and before each rain. From the results it was evident that dusting controlled both types of rust and that the protection increased directly with the frequency of the applications. The most effective treatment was 15 pounds per acre 3 times a week. This not only increased the yield from 21.3 bushels per acre (the yield of the check plot) to 55.1, but also improved the grade from No. 5 to No. 2 Northern, thus causing a net increase in value per acre of \$36.83. An interesting feature was that dusting before each rain was markedly more effective than dusting once a week, although the number of applications was the same.—*L. W. Kephart.*

5357. CARNE, W. M. Citrus brown rot. *Jour. Dept. Agric. Western Australia* 2nd ser. 2: 359. 1925.—Cases are cited to show the effectiveness of copper sprays in preventing brown rot. The importance of spraying before the autumn rains is emphasized.—*P. J. Olson.*

5358. EBERHARDT, ET J. CHEVALIER. Sur un traitement nouveau des maladies de la pomme de terre. [A new treatment for diseases of potatoes.] *Compt. Rend. Acad. Sci. Paris* 181: 733-735. 1925.—A new parasiticide is described, which is claimed to destroy plant lice and other insects, to arrest the development of such fungi as *Sphaerotheca pannosa* and *Phytophthora infestans* and to reduce markedly mosaic, leaf curl, and leaf roll. The treated plants give a higher yield. Details of preparation are given.—*C. H. Farr.*

5359. FITTS, O. B. June experiments at Arlington experimental turf garden with chlorophenol mercury compounds. *Bull. Green Sect. U. S. Golf Assoc.* 5: 147-148. 1925.—Both the large and the small brown patch disease appeared unusually early this year, occurring at Arlington, Boston and St. Louis, about June 5th. Treatments were immediately started with chlorophenol mercury (Semesan and Uspulun), Bordeaux, potassium permanganate, Sulco V. B., Corona, and top dressing with compost and ammonium sulphate. The mercuric preparations were the most effective.—*L. W. Kephart.*

5360. GODFREY, GEORGE H. Experiments on the control brown patch with chlorophenol mercury. *Bull. Green Sect. U. S. Golf Assoc.* 5: 83-87. 1925.—(See Bot. Absts. 14, Entry 7963.)

5361. KABLE, GEO. W. The O. A. C. diagonal axle dusting machine for treating wheat for smut. Oregon Agric. Coll. Exten. Bull. 381. 1-7. 5 fig. 1925.—The construction of a dusting machine from simple materials is described.—*C. E. Owens.*

5362. LEDUS, A. La bouille Bordelaise et sa composition chimique. [Bordeaux mixture and its chemical composition.] Sci. Agric. 6: 60-64. 1925.—Efforts to determine the composition of this fungicide are reviewed. The author concludes that it is composed of basic sulphates of copper and of calcium sulphate and that it does not contain a hydroxide of copper.—*L. W. Kephart.*

5363. LEHMAN, S. G. Studies on treatment of cotton seed. I. The control of cotton anthracnose by the use of dry heat. II. Germination of cotton seed and viability of anthracnose as influenced by desiccation and storage in inert gases. North Carolina Agric. Exp. Sta. Tech. Bull. 26. 1-71. Illus. 1925.—The 1st paper deals with the use of dry heat in eliminating seed-borne anthracnose. It was found that the germinability of air-dry cotton seed is completely destroyed in 15 minutes by dry heat at 90-100°C. If, however, the seed are pre-dried at 50° for 36 hours or at 60° for 18-24 hours they will endure a temperature of 95° for 12 hours without reduction in viability and anthracnose will be completely eliminated. A machine for treating seed in bulk with dry heat was devised and is described.—In the 2nd paper it is pointed out that the moisture content strongly influences resistance of cotton seed to heat. When the moisture content is as great as 3.9% of the oven-dry weight, viability is seriously impaired by heating at 95°C. for 12 hours. If the moisture content is reduced to less than 3.6% no injury results.—When the water content after drying was not greater than 3.1%, the seed heated at 95° for 12 hours germinated more promptly than unheated seed. This is attributed to changes in the seed coat, which facilitate access of water to the embryo.—The viability of the fungus is prolonged by storage over H₂SO₄ or CaO. Desiccation over these chemicals induces a more or less complete secondary dormancy as manifested by hard seed. Such seed germinate promptly upon removal of the seed coat.—Storage in H or CO₂ does not free seed from anthracnose.—*F. A. Wolf.*

5364. MONTEITH, JOHN, JR. July experiments for control of brown patch on Arlington experimental turf garden. Bull. Green Sect. U. S. Golf Assoc. 5: 173-176. 1925.—Commercial chlorophenol mercury at the rate of 1 pound in 50 gallons of water for 3000 sq. feet has been found to check the large brown patch disease. For the small brown patch a heavier application, or light treatments more frequently, are believed to be necessary. One pound in 50 gallons for 1000 sq. feet is suggested. The closely related compound, nitro-phenol mercury, has so far been ineffectual as has also the chlorophenol mercury in dust form. Bordeaux mixture is effective for large brown patch but not for small brown patch. In the case of any treatment it is highly advisable to follow with an application of compost and (NH₄)₂SO₄ to stimulate the grass.—*L. W. Kephart.*

5365. MONTEITH, JOHN, JR. August experiments for control of brown patch at Arlington experimental turf garden. Bull. Green Sect. U. S. Golf Assoc. 5: 202-203. 1925.—These observations substantiate those reported in the August bulletin. (See preceding entry.)—*L. W. Kephart.*

5366. MONTEITH, JOHN, JR. Control of turf diseases with chemicals. Bull. Green Sect. U. S. Golf Assoc. 5: 219-223. 2 fig. 1925.—A résumé is given of the results of tests for several years on the control of the large and small brown patch diseases on the experimental turf garden at Arlington Farm near Washington, D. C. In 1925 the results of previous work were checked by a comparative test of 11 substances including formalin, sulphur, copper sulphate, mercuric chlorid, Bordeaux mixture, copper stearate, Semesan, Uspulun, Corona 620, Corona 640 and Germisan. The last 5 named are commercial compounds of mercury with cresol, formaldehyde, phenol or similar materials. All the organic mercury preparations were effective in controlling the disease, but no more so than HgCl₂ which, because of its relative cheapness and the fact that it is already being used on golf courses for destroying earth worms, is considered preferable. The optimum application of HgCl₂ has not been determined but use of 1 pound in 50 gallons of water per 3000 sq. feet has given good results.—*L. W. Kephart.*

5367. MONTEITH, JOHN, JR. The season's experience with chlorophenol mercury as a con-

trol for brown patch. Bull. Green Sect. U. S. Golf Assoc. 5: 272-273. 1925.—The experience of golf clubs all over the U. S. A. during 1925 has been that chlorophenol mercury is efficacious in controlling brown patch, but that the period of protection is apt to be short and if too frequent applications are necessary the process is excessively costly. The rate of application most generally used was 1 pound in 50 gallons of water to 1000 sq. feet of turf. The period of protection varies from 48 hours to 6 weeks, but the maximum was usually only 1 to 2 weeks during the brown patch season.—*L. W. Kephart*.

5368. MORSE, W. J., AND DONALD FOLSOM. Apple spraying and dusting experiments 1913 to 1924. Maine Agric. Exp. Sta. Bul. 325. 125-184. 1925.—All data are from 1 Ben Davis orchard where the averages for 14 years gave May 19 for the pink application, June 1 for the calyx application, 50% scab for check plots, and 8% scab for the best control by spraying with lime-sulphur. A 3-application schedule that was effective from 1911 to 1916 inclusive, failed in several subsequent years. Lime-sulphur, liquid or dry, has given the best control of scab (*Venturia inaequalis*), but sometimes causes more thinning and russetting of the fruit than sulphur dusting. Lead arsenate alone gave some control of scab, improved the control afforded by lime-sulphur alone, and was nearly as effective, when used in double strength, as was lime-sulphur with lead arsenate for 2 post-blossom applications. A 2-10-50 Bordeaux mixture caused less russetting of the fruit but controlled scab less than a 2-2-50 Bordeaux mixture. Guns were more effective than rods under some conditions, but may have burned the foliage more under other conditions. Copper dust had effects similar to those of sulphur dust. A casein spreader and a copper-sulphate dormant spray were useless. In 1924, ascospore infection occurred as early as the time for the pre-pink application, but scab on the fruits was controlled by a schedule beginning with the pink application as well as by one beginning with the pre-pink. In several seasons the plots coincided with those of the preceding season, and a comparison of the scab percentages for 2 years showed no influence, in a given plot, of the 1st year's percentage on that of the 2nd. Dry lime-sulphur in 1 season caused less russetting of the fruit than liquid. A casein spreader in 1 season increased leaf injury by lime-sulphur spray. Spraying costs are detailed. A review is given of some of the literature on dry lime-sulphur, dusting, casein spreaders, and pre-pink applications.—*Donald Folsom*.

5369. OAKLEY, R. A. Some things we have learned about brown patch. Bull. Green Sect. U. S. Golf Assoc. 5: 75-77. 1925.—Chlorophenol mercury has been more effective than Bordeaux as a preventive of the large brown patch disease. Watering about sunrise and top-dressing with ammonium sulphate or ammonium phosphate in compost have also been helpful.—*L. W. Kephart*.

5370. ROACH, W., AND WM. B. BRIERLEY. Sulphur treatment of soil for wart disease. Nature 116: 865. 1925.—In the trials of 1925 sulphur reduced but did not entirely prevent the disease.—*O. A. Stevens*.

5371. TISDALE, W. H., J. W. TAYLOR, R. W. LEUKEL, AND MARION A. GRIFFITHS. New seed disinfectants for the control of bunt of wheat and the smuts of oats and barley. Phytopathology 15: 651-676. Pl. 25-28. 1925.—The materials tested for 4 years included all the organic mercury disinfectants available, as well as copper carbonate dust, formaldehyde, and furfural. The more promising were tested in $\frac{1}{4}$ -acre plats and comparative records kept as to effect on germination, amount of smut, and yield. Several of the substances tested produced a slight increase in percentage of germination, more vigorous growth of seedlings, and increased yield, probably due to destruction of saprophytic and parasitic organisms carried on the seed. Copper carbonate dust appeared to be the most satisfactory seed treatment for wheat bunt.—For control of the smuts of oats no dust treatment was found effective. Some of the mercury compounds, in solution, gave good results but none appeared to be superior to the standard formaldehyde followed by the lime water bath. The mercury compounds did, however, prove superior to formaldehyde in the control of barley smuts, Chlorophol, Corona No. 620, Germisan, Semesan, and Uspulun each giving good results.—*B. B. Higgins*.

5372. YOUNG, H. C. Colloidal sulphur as a spray material. Ann. Missouri Bot. Gard. 12: 133-143. 1925.—A comparative test of various sulphur-containing sprays and dusts was tried in a commercial way in New York, Pennsylvania, Michigan, Illinois and Virginia. Except in New York the sprays were applied to apples only. In general, 1923 was not a bad

apple scab year, especially in Illinois and Virginia, but the season favored the toxic action of all sulphur applications tested. The conclusions were not very definite, but in the main precipitated sulphur was not quite so effective as lime-sulphur, but more effective than the dusts, dry mix, or wettable sulphur. Its value was greater than lime-sulphur because in almost every case no injury to foliage resulted, and in every case a higher percentage of clean fruit was obtained. As a check on spray injury, precipitated sulphur and colloidal sulphur were applied to peach trees in rapidly growing condition. No injury resulted from precipitated sulphur during warm weather, but considerable burning resulted from colloidal sulphur, though not enough to be of economic importance. Practically the same results were obtained when these 2 types were applied to grape, plum, and sweet and sour cherries. Their most serious defect—poor sticking quality—may be overcome by the use of semi-solid buttermilk, which does not shift the reaction from that most desired—pH 4.2–5.0.—*S. M. Zeller*.

GENERAL AND MISCELLANEOUS PATHOLOGICAL LITERATURE

5373. BLACKMAN, V. H. Physiological aspects of parasitism. (Presidential address, Section K.) Rept. Brit. Assoc. Adv. Sci. 1924: 233–246. 1925.—This address is chiefly concerned with the relationship of host and parasite and their mutual reactions. Plants and animals are compared as regards immunity and general body reaction to disease. A discussion of the literature dealing with the mechanism of entry of a parasitic organism into a host plant is presented.—*C. L. Wilson*.

5374. BOODLE, L. A. Mistletoe on oaks. Kew Bull. 1924: 331–333. 1924.—It was found that mistletoe parasitic on oaks in Europe is rare in comparison with its occurrence on other hosts. It is not known to be parasitic on *Quercus Ilex*, but occurs on *Q. pedunculata* and *Q. sessiliflora* and on the introduced American species, *Q. palustris* and *Q. rubra*.—*T. J. Fitzpatrick*.

5375. DUFF, G. H. The occurrence and frequency of species of *Ribes* and *Grossularia* in Ontario. Rept. Minister Lands and Forests, Ontario 1922: 254–263. 1923.—This presents the results of a survey from Petawawa on the Ottawa River to Georgian Bay, undertaken to secure definite data on the occurrence of wild *Ribes* and to ascertain if any ecological relationships exist which might be of value should eradication become necessary. The investigation indicated that *Ribes* spp. are so numerous and occur so generally that a program of eradication could only be undertaken at great cost.—*A. W. McCallum*.

5376. EASTHAM, J. W., AND MAX H. RUHMANN. Diseases and pests of cultivated plants with article on sprays and spraying by B. Hoy. British Columbia Dept. Agric. Bull. 68. 1–112. 44 fig. 1924.—Brief, popular descriptions of the important diseases of cultivated plants in British Columbia are given.—*L. C. Cash*.

5377. FAULL, J. H. Pathological problems in the forests of eastern Canada. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 451. 1925.

5378. FAWCETT, H. S. Bark diseases of citrus trees in California. California Agric. Exp. Sta. Bull. 395. 1–61. 1925.—This revision of Bull. 360 gives a summary of the causes and control measures such as are known for the following citrus diseases: Pythiacystis gummosis and mal di gomma; dry root rot; Armillaria root rot; Botrytis and Sclerotinia gummosis; psorosis (scaly bark) of orange trees; decorticosis (shell bark) of lemons; Diplodia and Dothiorella gummosis and twig gumming; citrus blast; exanthema; and minor forms of gumming.—*A. R. C. Haas*.

5379. GIBBS, C. S. Observations and Experiments on rinderpest. China Jour. Sci. and Arts. 3: 399–409. 1925.—This is a report of an extensive study of rinderpest and its control which is being conducted at the University of Nanking, China. The prevalence, symptoms, pathology, and epidemiology of rinderpest are discussed and the conclusions from the investigation detailed.—*Author*.

5380. HERRMANN. [Rev. of: HAVELIK, K. Warum ist der falsche Kern bei der Buche nicht von Jahresringen begrenzt, wie der natürliche Kern bei anderen Bäumen? (Why is the false heartwood of beech not bounded by annual rings, like the true heartwood of other trees?) Ber. Deutsch. Bot. Ges. 43: 128. 1925.] Deutsch. Forstzeitg. 40: 1233–1233. 1925.—Havelik's paper presents no new information and relates only to decayed heart.—*W. N. Spurrhawk*.

5381. JACKSON, V. W., W. P. FRASER, AND D. L. BAILEY. The present status of the barberry eradication campaign in western Canada. *Sci. Agric.* 5: 375-378. 1925.—Since 1917 the Federal and Provincial governments have cooperated to locate and destroy all plantings of barberry in Manitoba, Saskatchewan and Alberta. No wild plants have been found and apparently the species does not thrive north of the U. S. A. boundary. No definite relation has yet been established between the scattered plantings of barberry and the widespread occurrence of rust.—*L. W. Kephart.*
5382. JOHNSTON, T. HARVEY, AND L. HITCHCOCK. A bacterial disease destructive to fish in Queensland Rivers. *Trans. and Proc. Soc. South Australia* 47: 157-161. 1923.
5383. JONES, J. P. Havana seed tobacco as influenced by timothy cover crop. *Massachusetts Agric. Exp. Sta. Circ.* 73. 1-3. 1925.—In 1924, the average yield of tobacco per acre on experimental plots which had had a timothy cover crop was 1150 pounds; on plots without a cover crop, 1315 pounds. Quality was not affected. Brown root-rot has been more prevalent on the cover crop plots. Growers are cautioned against using timothy cover crop, especially on soil where brown root-rot is known to be present.—*William L. Doran.*
5384. MONTEITH, JOHN, JR. Leaf-spot of bluegrass. *Bull. Green Sect. U. S. Golf Assoc.* 5: 198-199. 1925.—This disease, first reported in *Ibid* 4: 172, appeared in May 1925 on several courses near Washington, D. C. It is characterized by bi-colored spots and in severe cases by browning of the entire leaf. Spraying or dusting are not thought likely to prove practical control measures. Close clipping of the grass increases the injury.—*L. W. Kephart.*
5385. MOSS, E. H. Parasitism in the genus *Comandra*. (Abstract.) *Rept. British Assoc. Adv. Sci.* 1924: 446. 1925.
5386. OWENS, C. E. Report of the ninth annual meeting of the Pacific Division of the American Phytopathological Society. *Phytopathology* 15: 726. 1925.
5387. PLAKIDAS, A. G. An obscure new disease of the strawberry in California. (Abstract.) *Phytopathology* 15: 730. 1925.
5388. PLUM, N. Geflügeltuberkulose in Säugetieren. [Tuberculosis avium in mammals.] *K. Vet. Landbohsk. Aarbog* 1925: 63-185. 1925.
5389. REID, W. D. Collar-rot of peas. *New Zealand Jour. Agric.* 30: 250-255. 4 fig. 1925.—A disease of peas is described as causing a loss of 17% in New Zealand.—*N. J. Giddings.*
5390. STEVENS, NEIL E. The literature of plant pathology and the plant industry catalog. *Phytopathology* 15: 722-724. 1925.—A general outline of the scope and method of compiling of the "Plant Industry Catalog," Bureau of Plant Industry, U. S. Dept. Agric. is given.—*B. B. Higgins.*

PHARMACEUTICAL BOTANY AND PHARMACOGNOSY

HEBER W. YOUNGKEN, *Editor*

E. N. GATHERCOAL, *Assistant Editor*

(See also in this issue Entries 4456, 4620, 4628, 4551, 4655, 4660, 4699, 4701, 4703, 4981, 5109, 5111, 5112, 5469, 5523, 5540)

5391. ANONYMOUS. *Cascara sagrada*. *Kew Bull.* 1923: 407-408. 1923.—The cultivation of *Rhamnus Purshiana* at Kew since 1891 has met with good results. Preliminary investigations indicate that the wood is practically as active medicinally as the bark.—*T. J. Fitzpatrick.*
5392. ANONYMOUS. Cattle poisoning. *Jour. Dept. Agric. Victoria* 23: 502-503. 1925.
5393. ANONYMOUS. Peppermint in Western Australia. *Jour. Dept. Agric. Western Australia* 2nd ser. 2: 358. 1925.—This is a quotation from "Perfumery and Essential Oil Record," and shows that Western Australian peppermint oil compares very favorably with the English variety.—*P. J. Olson.*
5394. ANONYMOUS. Plants which cause hay fever. 2 col. pl., 45 fig. Arlington Chemical Company: Yonkers, 1925.
5395. ANONYMOUS. Vegetable oil notes, Nigeria and its palm-oil industry. *Tropical Life.* 21: 164. 1925.—An abstract from an article in the *African World* by W. F. HUTCHISON states that the demand for palm-oil has been increased by its growing consumption in the soap, candle, tin plate, and margarine industries. The value of palm-oil products exported

from Nigeria in 1924 was £10,000,000 which is probably only $\frac{1}{16}$ of what the forests could supply, if worked to their utmost capacity.—*H. N. Vinall*.

5396. ANDRÉ, ÉM. Contribution à l'étude des huiles du groupe chaulmoogrique. [Contribution to the study of oils of the chaulmoogric group.] Compt. Rend. Acad. Sci. 181: 1089-1091. 1925.—A study is presented of the physical properties and chemical nature of oils from the following species of the *Flacourtiaceae*: *Taraktogenos Kurzii* (chaulmoogra oil of India); *Hydnocarpus anthelmintica* (Krabao oil of China, etc.); *Hydnocarpus uightiana* (Kavatel oil); *Hydnocarpus alpina*; *Asteriastigma macrocarpa*; *Onocoba echinata* (Gorli fat of western Africa); and *Carpotroche brasiliensis* (Amazon region). These different oils have certain characteristics in common. It is likely that more than one of these oils are sold under the name of chaulmoogra oil.—*C. H. Farr*.

5397. ANDRÉ, ÉMILE, ET FRANCK GUICHARD. Contribution à l'étude des graisses de palmiers d'Amérique. Sur le beurre de Murumuru. [Contribution to the study of the fats of American palms. The butter of Murumuru.] Compt. Rend. Acad. Sci. Paris 181: 223-230. 1925.—Thirty-eight species of *Astrocaryum* are known in tropical America, from Mexico to Peru. One of these is *A. Murumuru*. From its seed may be extracted a butter which resembles coco butter; it has a higher consistency and contains no caproic acid, but an acid with a melting point of about 69°. The properties and analysis of this butter are given.—*C. H. Farr*.

5398. AUTRAN, M. V. Notes sur les plantes oléagineuses de l'Afrique Équatoriale Française. [Notes on the oil bearing plants of French Equatorial Africa.] Ann. Mus. Colonial Marseille 32: 5-24. 1924.—A description of 48 species of oil-bearing plants of French Equatorial Africa. The list includes 2 uncertain species of *Raphia* and 1 of *Lophira*, also 9 unnamed plants. In most descriptions the native names for the plants are given and frequently the native name for the products.—*C. M. Conrad*.

5399. B., C. L'industrie des huiles de ricin. [The Castor Oil Industry.] Jour. Suisse Pharm. 59: 253-254. 1921.—Not only is castor oil used as a medicine, but it is used in the manufacture of soap, particularly transparent toilet soaps, and it is of especial value at this time as a fuel and a lubricator. Castor oil has given most excellent results, when used in the motors of aeroplanes.—*Charles C. Plitt*.

5400. BLOMMENDAAL, H. N. The preparation of palm oil. Communica. Gen. Exp. Sta. A. V. R. O. S. [Medan] Gen. Ser. 21: 1-21. 1925.—A discussion of the different processes and machinery used in production of palm oil.—*C. M. Conrad*.

5401. BRUNNER, G. E. Paniculatine, das Alkaloid von *Aconitum paniculatum* Lam. [Paniculatine, the alkaloid in *A. paniculatum*.] Schweiz. Apoth.-Zeit. 60: 357-358. 1922.—*Aconitum paniculatum* is rather common in the Swiss Alps. The alkaloid was isolated from the tuberous roots of the plant. It is not identical with aconitine. The author gives it the provisional formula $C_{29}H_{35}NO_7$ with molecular weight of 509.—*Charles C. Plitt*.

5402. BRYANT, P. L. Chinese camphor and camphor oil. China Jour. Sci. and Arts 34: 228-234. 2 pl. 1925.—Summary of an address before the China Society of Science and Arts, November, 1924.—Camphor excretion is more abundant in old trees and causes them to cease bearing flowers and fruit. Trees 100 years or more old are preferred. The wood is cut into chips and steamed in an iron pot from which crystals and oil of camphor are condensed. The oil is then subjected to processes of distillation, which, in spite of the crude equipment, bring out the desired products. Some of the products of camphor and camphor oil are discussed.—*Albert N. Steward*.

5403. CHARD, GEORGE M. *Ricinus communis* in Bahia and Brazil. Tropical Life 21: 161-163. 1925.—The castor-oil plant is supposed to have originated in India but the writer claims that the evidence points to Africa as its home. Four varieties were found growing in Bahia, South America, in the same soil and under the same climatic conditions. Recently a new and hitherto unknown member of the family, which has not been named, was found. "The seeds are oblong and mottled, and have at their base a peculiar indentation which distinguishes them from *Ricinus communis*. The oil content is the same—some 60% in the kernel—and in view of the fact that cattle resort to it when there is a shortage of fodder, it cannot have the poisonous properties of castor-oil." Of the 4 varieties, the seed of 3 are oval in

shape and mottled brown and white, while the other is more or less square and is mottled with red and white. In Bahia it grows everywhere as a shrub or tree and growth is rapid; in 2 months from the time of planting the seed there is a continuous crop.—The remainder of the article is devoted to a discussion of the oil and its uses, methods of oil extraction; directions for planting and an appeal to have more of the castor-oil plant grown in Brazil. The writer dwells on its freedom from disease and insect enemies and on the fact that it is not usually overcome by weeds. He relates, however, that it was attacked by mildew in a large planting and that this disease swept over the entire area.—*H. N. Vinall.*

5404. CHEN, K. K. The Chinese cinnamon and its products (*Cinnamomum cassia*). China Jour. Sci. and Arts 3¹¹⁻¹²: 611-217, 658-664. 9 pl. 1925.—A brief description of *Cinnamomum cassia* and its range is given. The history of cinnamon in China is discussed. The anatomy of the bark, twigs, leaves, and buds is described in detail. The process whereby the oil is distilled is explained and data are given concerning the commercial importance of the cassia bark, twigs, buds, and oil.—*Albert N. Steward.*

5405. DANIEL, L., ET E. POTEL. Greffes de Douce-Amère sur racines de Belledone. [Grafts of *Solanum dulcamara* on roots of belladonna.] Compt. Rend. Acad. Sci. Paris 181: 357-358. 1925.—In 1921 Ripert discovered that in 1-year-old grafts atropine diminishes in the roots and passes to the epibiot in these grafts. Analyses are here made of water, dry matter, ash, cellulose, and alkaloids in grafted and control plants of both species. Grafting increases the water content and dry weight of the roots. The ash content is slightly lower and the cellulose and alkaloids much lower. The alkaloid content of the nightshade is zero as a control, but in 1-year graft as an epibiot it contains 0.009, and at the end of 5 years 0.029. The cellulose, ash, dry weight and water content in the meantime remain quite constant.—*C. H. Farr.*

5406. HAGER, HANS HERMANN JULIUS. Hagers Handbuch der pharmazeutischen praxis für apotheker, ärzten, drogisten und medizinbeamte. [Hager's handbook of pharmaceutical practice.] With the collaboration of E. RIMBACH, F. MANNHEIM, L. HARTWIG, C. BACHEM, W. HILGERS, new ed. edited by G. FRERICHs, —G. ARENDs, and H. ZÖRNIG. Illus. J. Springer: Berlin, 1925.

5407. HAUBERG, P. Planter i Lægekunstens og Overtroens Tjeneste. [Plants in the service of medicine and superstition.] Nat. Verden 9: 125-138. 1925.

5408. HECKE, LUDWIG. Die Kultur der Mutterkornes. [Ergot Culture.] Schweiz. Apoth.-Zeitg. 59: 277-281, 293-296, 1921.—The culture of ergot is described and the author shows that such a culture is possible. The question whether the culture might not become a menace to the raising of rye, the author thinks unlikely; naturally, closely fields may occasionally become infected, but none beyond 100 meters. Whether the culture of ergot will be profitable will naturally depend upon its cost of production.—*Charles C. Platt.*

5409. HOLLAND, J. H. Castor seed and oil. Kew Bull. 1923: 403, 409. 1923.—Mainly devoted to the cultivation of *Ricinus communis* in the state of Sao Paulo, Brazil.—*T. J. Fitzpatrick.*

5410. HOLLAND, J. H. *Strychnos cinnamomifolia*. Kew Bull. 1924: 240. 1924.—Seed collected at Travancore, India, were found to contain 2.231% brucine and 0.342% strychnine.—*T. J. Fitzpatrick.*

5411. HOLMSTRÖM, J. J. Untersuchung der Wurzeln von Rheum Emodi Webb. [Investigation of the roots of *R. Emodi*.] Schweiz. Apoth. Zeitg. 59: 169-175, 183-189. 1921.—The material used was grown in the botanical garden at Bern. The author finds that 6-7 extractions suffice to remove all extractive matter, which contained the following: the glucoside, rhaponticin; chrysophanic acid; emodin (trace); d-glucose; and phytosterin.—*Rheum Emodi* therefore belongs to the rhaponticin group and should not be used as a substitute for the official rhubarb.—*Charles C. Platt.*

5412. LEAKE, CHAUNCEY D. The historical development of surgical anesthesia. Sci. Monthly 20: 304-328. 1925.—A part of the article describes the early and present use of cocaine, opium, and mandragora and their derivatives in anesthesia.—*A. M. Taylor.*

5413. LENDNER, A. Sur la mahwa de l'Inde. [The mahwa of India.] Jour. Suisse Pharm. 60: 713-719. 1922.—Mahwa is a sugary substance formed in the fallen corollas of a tree, *Illipe latifolia* Engler (= *Bassia latifolia* Roxb. = *B. villosa* Wall.). It contains

58-63% of crystallizable inverted sugar, 1.7% tartaric acid, and 2.9% citric acid. The leaves of the plant contain traces of an alkaloid. The seed contain as much as 55% of fat (80% stearin, 20% olein). The morphology of the flower is described in some detail and points of distinction are given separating the 2 species (*Illipe latifolia* and *T. Melabarorum*) that are closely related. The author also describes a new yeast, *Zygosaccharomyces Mahwe*, which causes fermentation in this drug.—*Charles C. Plitt.*

5414. MARSH, C. D. Stock-poisoning plants of the range. U. S. Dept. Agric. Dept. Bull. 1245. 1-36. 43 pl., 30 fig. 1924.—Brief descriptions are given of the more important stock-poisoning plants of the western half of the U. S. A., together with statements of the general effects produced by them on live stock. Many of the illustrations are in natural colors. One or more species of the following genera are included: *Zygadenus*, *Quercus*, *Sarcobatus*, *Delphinium*, *Aconitum*, *Prunus*, *Lupinus*, *Psoralea*, *Daubentonia*, *Oxytropis*, *Astragalus*, *Karwinskia*, *Cicuta*, *Menziesia*, *Leucothoe*, *Ledum*, *Rhododendron*, *Azalea*, *Asclepias*, *Xanthium*, *Helenium*, *Baccharis*, *Xylorrhiza*, *Hymenoxys*, *Isocoma*, and *Pteris*.—*A. B. Clawson.*

5415. MARSH, C. DWIGHT, AND A. B. CLAWSON. The meadow death camas (*zygadenus venenosus*) as a poisonous plant. U. S. Dept. Agric. Dept. Bull. 1240. 1-13. 2 pl., 2 fig. 1924.—The authors discuss the characteristics of the plant, its distribution and their results of a series of feeding experiments. Cattle and sheep were poisoned and 1 sheep was killed by the plant. Vomiting was the only symptom in swine. More sheep are affected than any other class of animals. Horses are often poisoned. The symptoms produced are the same as with the other species of *Zygadenus* which have been studied. While the minimum toxic dose of *Z. venenosus* is about the same as that of *Z. gramineus*, the minimum lethal dose is much larger. *Z. venenosus* is about 3 times as toxic as *Z. paniculatus* and 7 times as toxic as *Z. elegans*.—*A. B. Clawson.*

5416. MESTRE-FUENMAYOR, ANÍBAL. El Eucaliptus en venezuela. [Eucalyptus in Venezuela.] Mem. 4° Congr. Venezol. Med. 2: 167-172. Caracas, 1925.

5417. MURAYAMA, YOSHITSU. [The chemical constituents of the chemical drug "Hsiung-Ch'uang." I.] (Japanese.) Jour. Japanese Pharm. Soc. Japan 1921: 951-959. 1921.—The ethereal oil from the drug obtained from *Cnidium officinale* Makino was analyzed.—(From author abst., Japanese Jour. Chem.)

5418. NOGUERA-GÓMEZ, E. Fermentos vegetales. [Vegetable ferments.] Mem. 4° Congr. Venezol. Med. 2: 161-164. Caracas, 1925.

5419. NOGUERA-GÓMEZ, E. Nota preliminar sobre las propiedades terapéuticas y químicas de las sapominas. [Preliminary note on the therapeutic and chemical properties of saponins.] Mem. 4° Congr. Venezol. Med. 2: 164-167. Caracas, 1925.

5420. OESTERLE, O. A. Flüchtige Körper aus Cortex Frangulae. [Volatile substances from Frangula.] Schweiz. Apoth-Zeitg. 59: 341-345. 1921.—The author describes his attempts in isolating one of such substances, already mentioned by Flückiger in 1889, to which he gives the provisional formula $C_{15}H_{12}O_4$. He obtains a somewhat similar substance as a reduction product by the action of tin and HCl upon frangula-emodin, but has not yet succeeded in obtaining emodin from it by oxidation. Further work will be necessary upon this, as also upon the scarcely oxidizable reduction product found by Tutin and Clewer in emodinmonomethylether, and later by Eder in commercial chrysarobin, which the author thinks may show relationship with the first mentioned product.—*Charles C. Plitt.*

5421. PENFOLD, A. R. The essential oil of *Backhousia angustifolia*. Pt. 1. Jour. and Proc. Roy. Soc. New South Wales 57: 300-312. 1923 [1924].—The plant yielded 1.05% of oil, containing 75% of a hitherto undescribed phenol, $C_{16}H_{14}O_3$, d-alpha-pinene, beta-pinene, cineol, d-alpha-terpineol, and a stearoptene, $C_{15}H_{16}O_3$, melting point 118-119°C. The phenolic compound possessed the following characters: Boiling point at 10 mm., 122-124°C.; specific gravity at 15°C., 1.0900; optical rotation—4.65°; refractive index at 20°C., 1.5130.—(From Australian Sci. Absts.)

5422. PENFOLD, A. R. The essential oil of *Darwinia grandiflora* and the presence of the new acetic acid ester. Jour. and Proc. Roy. Soc. New South Wales 57: 237-248. 1923 [1924].—The leaves and terminal branchlets yielded pale lemon-tinted, pleasant-smelling oils varying from 0.3% to 0.5%, containing d-alpha-pinene, an unidentified terpene boiling at 175-

177°C. (dihydrochloride, M.Pt. 53-54°C.), a sesquiterpene and sesquiterpene alcohol, stearoptene of M.Pt. 103-104°C., and the acetic acid ester of a dextro-rotatory alcohol (called darwinol acetate) occurring to the extent of 30%.—(From *Australian Sci. Absts.*)

5423. PITTIER, H. *Flora venezolana: plantas medicinales*. [Venezuelan flora: Medicinal plants.] Mem. 4^o Congr. Venezol. Med. 2: 230-241. Caracas, 1925.—Under this somewhat deceptive title, the author publishes an attempt at a classification of the medicinal plants of Venezuela according to their real or supposed virtues. Vernacular and Scientific names are given.—*Author*.

5424. RAEBIGER. *Pilze als Fischfutter*. [Mushrooms as fish food.] Zeitschr. Pilzkunde 5: 71-72. 1925.—An instance is given of carp thriving on a diet including various fleshy fungi in a state of partial decomposition and infested with maggots. Both fish and crabs are said to eat poisonous mushrooms without harm.—*F. Weiss*.

5425. ROSENTHALER, L. Beiträge zur Blausäurefrage. 6, 7, 8, 9, 10. [Contributions upon the hydrocyanic acid question.] Schweiz. Apoth-Zeitg. 59: 10-13, 22-26, 465-469, 641-647. 1921.—In (6), Über den Blausäuregehalt der Kirschchlorbeerblätter. [Hydrocyanic acid content of cherry laurel leaves.], a study is made of the leaves on several branches of *Prunus laurocerasus* and on *P. lauracerasus* var. *schipkaensis*, at different periods of the growing season. The author finds that in early June, when the new leaves have not reached full growth, the younger the leaf the greater the hydrocyanic acid content. Leaves studied at other times of the year show little difference among themselves. Right half and left half, and also upper half and lower half of a leaf have practically the same acid content.—In (7), Notis über *Cornus sanguinea* L., the author calls attention to a later experiment showing that the leaves of this plant do not contain hydrocyanic acid; it is therefore to be removed from his list of plants containing this acid. The leaves do, however, contain salicylic acid producing derivatives.—(8). Blausäure- und Saponinpflanzen. [Hydrocyanic acid and saponin plants.] Schär in 1913 pointed out that in a number of plants 20-25 families, both the hydrocyanic acid glucoside and saponin were present at the same time, and raised the question whether there was any connection between these 2 groups of glucosides. Using "A study on the chemical constituents of Argentine plants," by Juan A. Dominguez, José F. Mollino, and Emilia L-de Gallelli (Trans. Bot. and Pharm. Inst. Buenos Aires 40.), the author prepares a list of plants containing these 2 glucosides. Fourteen of them contain hydrocyanic acid but no saponin, 85 contain saponin but no hydrocyanic acid, and only 1, *Manihot Tweedienus*, contains both. The author remarks that, considering their wide distribution in plants, it is remarkable that both substances do not oftener appear together. Besides *M. Tweedienus*, both glucosides have been found only in *Arum maculatum*, *Liriodendron tulipifera*, *L. Chinense*, *Clematis integrifolia*, *C. lanuginosa*, *C. orientalis*, *C. Fremonti*, and *Dimorphotheca Ecklonis*. However, in *Eriobotrya japonica*, the seed contain hydrocyanic acid and the leaves saponin; and in *Spiraea japonica* and *S. Aruncus*, the leaves contain hydrocyanic acid and the seed saponin. The author concludes that there is no regularity in the presence of both glucosides.—(9) Ueber den Blausäuregehalt pilzinfiltrierter Kirschchlorbeerblätter. [The hydrocyanic acid content of fungus-infected cherry laurel leaves.] Infected leaves are found to have a lower hydrocyanic acid content than uninfected leaves. There are 3 possibilities that might explain the connection between infection and acid content: (1) Leaves are infected because they are poorer in hydrocyanic acid than normal leaves; (2) in the infected leaves the acid content was considerably reduced because it was utilized by the fungus; (3) due to the infection, normal assimilation and then hydrocyanic acid production, has been hindered. The author believes the 3rd to be most probable.—(10) Ueber den Einfluss von Vorwundungen auf den Blausäuregehalt der Kirschchlorbeerblätter. [Influence of wounding hydrocyanic acid content of cherry laurel leaves.] Leaves were injured in various ways and examined about 2 weeks later. Little or no influence could be detected. As the experiments were conducted during August and September, when growth is no longer vigorous, the author leaves the question open until he has had a chance to make the test in May and June.—*Charles C. Plitt*.

5426. ROSENTHALER, L. Beiträge zur Blausäurefrage. 11, 12, 13, 14, 15. [Contributions upon the Hydrocyanic Acid Question.] Schweiz. Apoth-Zeitg. 60: 234-236, 477-481, 522-525, 1922.—(11) Das Blausäureglykosid von *Dimorphotheca Ecklonis* DC. [The hydrocyanic acid

glucoside in *Dimorphotheca Ecklonis* DC.] This composite, growing in grass land in South Africa, is poisonous to cattle. Examination shows that the leaves yield 1.247%, the green stalks 0.374%, the older brown stalks 0.143% and the blossoms 0.826% of hydrocyanic acid. The glucoside present was found to be linamarin; it readily decomposes into hydrocyanic acid, acetone and glucose.—(12) Ueber den Nachweis der Bläusäure in Pflanzen. [The proof of hydrocyanic acid in plants.] Several methods for detecting hydrocyanic acid in plants are described.—(13) Ueber das Bläusäureglykosid der Samen von *Prunus virginiana* L. [The hydrocyanic acid glucoside in the seed of *Prunus virginiana* L.] The author finds that the glucoside here is l-amygdalin; no other glucoside has thus far been found in the seed of any species of *Prunus*.—(14) Bläusäure aus süßen Mandeln. [Hydrocyanic acid in sweet almonds.] The question whether unsprouted sweet almonds yield hydrocyanic acid has frequently been studied; some workers find the acid present, others do not. In 4 samples the author finds hydrocyanic acid present in varying amounts; in 1 case so small an amount was found that he thinks it quite possible some sweet almonds may be entirely free.—(15) Ueber den Einfluss von Verwundungen auf den Bläusäuregehalt der Kirschchlorbeerblätter II. [Influence of wounding on the hydrocyanic acid content of cherry laurel leaves II.] The experiments were conducted in June and July. Perpendicular cuts parallel to the lateral veins were made with a razor on $\frac{1}{2}$ of each leaf investigated. Results show that in June and July, for a few days after the wounding, the wounded side shows a greater hydrocyanic acid content than the unwounded side, later this difference disappears.—Charles C. Plitt.

5427. SABALITSCHKA, UND STEJSKAL. Das Muskarin im deutschen Fliegenpilze nicht vorhanden? [Does muscarin occur in the German fly fungus?] Zeitschr. Pilzkunde 5: 9-12. 1925.—Diverse opinions of a number of authorities are cited as to the occurrence of muscarin in *Amanita muscaria* of Central Europe, and as to the edibility of this species. No conclusion is reached, but the unsatisfactory nature to toxicological studies which do not specify the distribution of toxic constituents within the mushroom is pointed out.—F. Weiss.

5428. STOLL, A. Ueber Mutterkorn. [Ergot.] Schweiz. Apoth. Zeitg. 60: 341-346, 358-364, 374-383, 1922.—The author gives a short history of ergot from the earliest times. The first written account of the action of ergot upon the uterus appears in 1582 in the "Herbal" of Adam Lonicerus. It was only in the early part of the 19th century that its action as an aid in childbirth was scientifically studied. In 1870 ergotine and ecboline were discovered, followed later by the discovery of several other constituents, ergotoxine, cornutine, ergotinine, etc. Still later, tyrosine and tyramine were also isolated. Nevertheless, the drug still possessed a physiological action which the substances isolated did not possess. The author was convinced that due to faulty technique, it had been impossible to isolate this active constituent. By change of technique he isolated ergotamine; a discussion follows upon its isolation, chemical formula $C_{33}H_{35}N_5O_6$, physical and chemical properties, etc. Just as ergotoxine can readily be changed into ergotinine so ergotamine can be changed into ergotaminine. He also succeeds in changing ergotaminine back again into ergotamine. A table shows the chemical and physical differences, between ergotoxine, ergotinine, ergotamine and ergotaminine. The conclusion is reached that the physiological action of ergot depends upon the ergotamine present.—Charles C. Plitt.

5429. TSCHIRCH, A. Die Prüfung des Crocus. [The Examination of Saffron.] Schweiz. Apoth. Zeitg. 60: 373-374. 1922.—The author here describes more fully the nature of the alcohol-extracted coloring matter, not fully treated in his "Handbuch der Pharmakognosie." The water-soluble coloring matter is the crocin of others, the alcohol-soluble part he is convinced is the derivative product of this glucoside, the so-called crocetin. The crocetin prepared from the water-soluble extract by treating with dilute H_2SO_4 and the alcohol-extracted coloring matter are found to be identical.—Charles C. Plitt.

5430. VÈZES, M. ET G. DUPONT. Résines at térébinthines. Les industries dérivées. [Resins and turpentine. Derived industries.] 656 p. 118 fig. Librairie, J. B. Baillière et Fils: Paris, 1924.—Part I is a general treatise on resins and balsams, including their mode of secretion, their composition, classification, physical and chemical properties, and brief information regarding the principal commercial balsams, resins, gum resins, and synthetic resins.—Part II takes up in detail the turpentine and rosin industry, especially in France, the U. S. A., Spain, Portugal, and Greece. Part III deals with resin oils, resin black, resin soaps, resinsates, and resin ethers.—W. N. Sparhawk.

5431. WAKEFIELD, E. M. [Rev. of: HENRY, A. *Manna of larch and of Douglas fir, melezitose and lethal honey*. Pharm. Jour., April 12, 1924. Larch Agaric. Ibid., April 26, 1924.] Kew Bull. 1924: 272. 1924.—An epitome of the articles, giving the history, distribution, chemistry, and uses.—*T. J. Fitzpatrick*.

5432. WELCH, M. B., W. W. MCGLYNN, AND F. A. COOMBS. Some notes on wattle barks. Jour. and Proc. Roy. Soc. New South Wales 57: 313-333. 1923 [1924].—The authors discuss the structure of wattle bark, and the distribution of tannin in *Acacia decurrens* and its varieties. It was found that potassium bichromate was the most efficient precipitating agent and had no effect on the soluble non-tannins. The paper deals with the concentration of tannin in the cell, and a comparison is made of the percentage of tannin in different portions of the bark. It seems probable that the maximum percentage of tannin is present at the end of the winter, particularly in the oldest cells of the phloem, parenchyma and medullary rays.—(*From Australian Sci. Abst.*)

PHYSIOLOGY¹

B. M. DUGGAR, *Editor*

W. J. ROBBINS, *Assistant Editor*

(See also in this issue Entries 4467, 4487, 4695, 4699, 4701, 4702, 4721, 4725, 4728, 4729, 4801, 5007, 5062, 5076, 5102, 5109, 5110, 5111, 5112, 5120, 5122, 5133, 5187, 5260, 5261, 5405, 5543)

DIFFUSION, PERMEABILITY, PHYSICO-CHEMICAL PHENOMENA

5433. BRIDEL, M., ET C. CHARAUX. Méthode biochimique de recherche, dans les végétaux, des glucosides hydrolysables par la rhamnodiastase. [A biochemical method of research, in plants, on the glucosides hydrolysable with rhamnodiastase.] Compt. Rend. Acad. Sci. Paris 181: 1167-1168. 1925.—Rhamnodiastase is less specific than emulsin, but nevertheless can be used in a biochemical method of research on glucosides. The changes in deviation and the percentages of reducing sugars are found for 6 glucosides of 6 different plants. Six other plants were also examined in the same way. The method is regarded as useful in the extraction of unknown glucosides and in the determination of variations in the glucoside content of plants during development.—*C. H. Farr*.

5434. CURTIS, O. F. The transport of foods and nutrients in woody plants. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 443. 1925.

5435. DIXON, H. H. The ascent of sap and transport of food materials in trees. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 443. 1925.

5436. HARDY, F. The isoelectric theory: Its application to the defecation of cane juice. Internat. Sugar Jour. 27: 546-550. 1925.—A marked difference may be expected during factory treatment in the behavior of the 2 types of colloids in the fresh cane juice, that is, the highly hydrated colloids, consisting of the proteins, pentosans, and pectins, and the slightly hydrated colloids, that is, the coloring matters, hydrous silica, and waxes, fats, and soaps. From the discussion of these colloids given "it is evident that the application of the isoelectric theory of colloids to the complex system, cane juice, brings out many obscure interrelationships, whose recognition helps the student not only to visualize changes that occur during defecation, but also to suggest fresh research along lines that might lead to improvement in existing methods."—*Nellie E. Fealy*.

5437. HOWARD, GRACE E. Pigment studies with special reference to carotinoids in fruits. Ann. Missouri Bot. Gard. 12: 145-212. Pl. 10-18. 1925.—This study included the use of the Duboscq microcolorimeter in the determinations of relative amounts of fruit pigment, and the determinations of these pigments in various fruits, such as those of *Solanum Lycopersicum*, *S. Dulcamara*, *S. Pseudo-Capsicum*, *Cucumis Citrullus*, *C. Melo*, *Aglaonema*

¹ Due to temporary absence of the editor, responsibility for the section, this issue, rests with William Seifriz, University of Pennsylvania, Philadelphia.

Treibii, *Rhus canadensis*, *Arisaema triphyllum*, *Citrullus vulgaris*, *Celastrus scandens*, *Evonymus americana*, *E. europaea*, *Lonicera* sp., *Rosa rugosa*, *Asparagus officinalis*, *Capsicum annuum*, *Lycium halimifolium*, *Viburnum Opulus*, *Sorbus sitchensis*, *Gaultheria ovalifolia*, *Symphoricarpos orbiculatus*, *Fragaria* sp., *Rubus spectabilis*, *Sambucus callicarpa*, *Vaccinium parvifolium*, and *Crataegus phaenopyrum*. Plastids were also studied and experiments in the ripening of fruit were conducted. During the ripening of fruit a change from oval or globose to long spindle shape of plastids occurs. In some red fruits the pigment is crystalline in form. In most fruits studied the pigment occurs in a stroma or definite amorphous state contained in a lipid substratum. "Lycopersicin was present in a crystalline form in the red-ripe fruits of *Solanum Lycopersicum*, *Cucumis Citrullus* and *Aglaonema Treibii*." By comparisons of the CS₂ extract of dried tomato pulp, with a methyl red solution it was proved that such pulp lost little pigment during a period of 5 months in the dark.—"A characteristic lycopersicin spectrum was obtained with a CS₂ extract of the pigments in the ripe fruits of the following: *Aglaonema Treibii*, *Solanum Lycopersicum*, *S. Dulcamara*, *Rhus canadensis*, *Arisaema triphyllum*, and *Citrullus vulgaris*. A characteristic carotin spectrum was obtained with a CS₂ extract of the following fruits: *Celastrus scandens*, *Solanum Pseudo-Capsicum*, *Evonymus americana*, *Lonicera* sp., *Rosa rugosa*, *Evonymus europaea*, *Asparagus officinalis*, *Capsicum annuum*, *Lycium halimifolium*, *Cucumis Melo*, *Viburnum Opulus*, and *Sorbus sitchensis*. Only anthocyanin pigments were found in the fruits of *Gaultheria ovalifolia*, *Symphoricarpos orbiculatus*, *Fragaria* sp., *Rubus spectabilis*, *Sambucus callicarpa*, and *Vaccinium parvifolium*. Both anthocyanin and carotinoid pigments were found in the fruits of *Crataegus phaenopyrum*, *Rosa rugosa*, *Sorbus sitchensis*, *Lonicera* sp., and *Viburnum Opulus*."—The carrot carotin occurred in both crystalline and granular forms, but free in the cytoplasm. It appeared to be laid down as a storage product in the medullary rays. The optimum temperature for the rapid ripening of *Lycium halimifolium* fruits was 26–28°C. The optimum temperature for the rapid ripening of pepper fruits was 22–24°C.—*S. M. Zeller*.

5438. HUGOUNENQ, L., ET J. LOISELEUR. Sur la superposition des phénomènes de dissociation et d'adsorption élective dans les diastases protéolytiques. [The superposition of the phenomenon of dissociation and the selective adsorption of proteolytic enzymes.] Compt. Rend. Acad. Sci. Paris 181: 149–151. 1925.

5439. KAYSER, E., ET H. DELAVAL. Radioactivité, fixateurs d'azote et levures alcooliques. [Radioactivity in relation to nitrogen fixers and alcoholic yeasts.] Compt. Rend. Acad. Sci. Paris 181: 151–153. 1925.—The effects of the radioactive minerals of the Belgian Congo upon the fixation of N by 2 species of *Azotobacter* and of the production of pyruvic acid in alcoholic fermentation are studied. The accelerating effect is greater on *A. agile* than on *A. de la Comore*, and in the latter it is greater with 3 mg. per 100 than with 4 mg. Both total and soluble N is increased, but the latter more than the former as the dosage is increased. Maximum fixation is obtained in white light and minimum in darkness, with yellow, green, and blue giving an intermediate effect. Similar results were obtained with yeast activity.—*C. H. Farr*.

5440. LLOYD, F. E. The fluorescent pigments of the Cyanophyceae. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 445. 1925.

5441. MACDOUGAL, D. T. Variations in volume of and movements of liquids in trees. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 444. 1925.

5442. McLEERY, W. L. Deterioration of cane mill juices from the aspect of acidity increase. Internat. Sugar Jour. 27: 543–545. 1925.—Absence of a direct method of accurately determining sucrose in cane entering the factory has tended to obscure the losses caused by bacteria during milling operations. In 1923 Mr. Roberts found that the acidity of mill juices in the latter part of the train was as high or even higher than in the crusher juice. Steps taken to keep down all sour accumulations were followed by immediate results, these being expressed as acidity percentage Brix, and after various steps were taken in 1924 to reduce bacterial action to a minimum it was found that the actual percentage increase of acidity on this basis was very small.—*Nellie E. Fealy*.

5443. MEUNIER, L., ET A. BONNET. Sur la fluorescence des matières colorantes végétales. [The fluorescence of vegetable coloring matters.] Compt. Rend. Acad. Sci. Paris 181: 465–467.

1925.—The woods of Quebracho, Colorado, and Tizérah were used as a source of these extracts.—*C. H. Farr.*

5444. PAINE, H. S., B. C. SIBLEY, AND J. C. KEANE. Hydrogen-ion values compared with titration figures for beet sugar factory juices. *Internat. Sugar Jour.* 27: 540-543. 1925.—Hydrogen-ion concentration is a more direct index of proper flocculation conditions in beet diffusion juice than are titration values, and even should pH and alkalinity titration values vary in a closely identical manner the control of carbatation and of sulphuring by determining the pH might be simpler and consume less time than the titration of alkalinity if convenient and sufficiently accurate colorimetric methods were available or a suitable automatic recording system for electrometric determinations of pH values were devised.—*Nellie E. Fealy.*

5445. PASCHER, A. [Rev. of: WEBER, F. Schraubenplasmolyse bei Spirogyra. (Spiral plasmolysis in Spirogyra.) *Ber. Deutsch. Bot. Ges.* 43: 217-223.] *Arch. Protistenk.* 52: 375-376. 1925.

5446. POPESCO, C.-T. Mouvements de sommeil et de veille comparés chez le *Desmodium canadense* franc de pied et greffé. [The sleep movements of *Desmodium canadense* on its own roots and grafted.] *Compt. Rend. Acad. Sci. Paris* 181: 470-472. 1925.—The woody *Desmodium* is grafted upon the herbaceous annual *Soissons* bean. The epibiot is smaller than the control but densely loaded with flowers and fruits. At midnight the leaves were raised, whereas in the control they were folded. The controls become completely closed by 11 P.M. and begin to open at 3 A.M. and are fully open at 5 A.M. The grafted plants begin to fold at 8 P.M., are completely closed by 9 P.M. and begin to open at 4 A.M., being completely open by 9 A.M. Thus it is shown that grafting has an effect upon sleep movements.—*C. H. Farr.*

5447. PRINGSHEIM, E. G. [Rev. of: RUHLAND, W., UND HOFFMAN, C. Die Permeabilität von *Beggiatoa mirabilis*. Ein Beitrag zur Ultrafiltertheorie des Plasmas. (Permeability of *B. mirabilis*. A contribution to the ultrafilter theory of the plasma.) *Arch. Wiss. Bot.* 1: 1. 1925.] *Arch. Protistenk.* 52: 374-375. 1925.

5448. ROBERTSON, T. B. The influence of hydrolysis upon the capacity of proteins to bind acids and bases. *Australian Jour. Exp. Biol. and Med. Sci.* 1: 31-37. 1924.—The neutralizing capacities of casein and gelatin for acids and bases before and after hydrolysis by trypsin have been determined at the following pH values: 2, 8.2, and 10.5. The ratios, Equivalents of acid or base neutralized: Equivalents of free amino nitrogen, decreased in consequence of hydrolysis in all solutions excepting gelatin at pH 10.5. It is inferred that the predominant method of union of proteins with acids and bases is not through the agency of free amino or carboxyl groups. The occurrence of ratios in excess of unity leads to the same conclusion. The combining capacity of casein for acids at pH 2 is considerably reduced by hydrolysis.—(*From Australian Sci. Absts.*)

5449. SAMEC. Sur les propriétés chimico-colloïdales des composants de l'amidon. [The chemico-colloidal composition of starch.] *Compt. Rend. Acad. Sci. Paris* 181: 477-479. 1925.

5450. TRELEASE, SAM F. Chamber with thermostatic control and rotating table for plant cultures. *Bull. Torrey Bot. Club* 52: 389-395. *Fig. 1.* 1925.—A plan is presented for a chamber that will automatically maintain any desired temperature between 10° and 35°C. The construction resembles that of an ordinary refrigerator and has rotating table and thermostat.—*P. A. Munz.*

WATER RELATIONS

5451. HUMPHREYS, W. J. Ice ribbons. *Sci. Monthly* 21: 511-514. 1925.—The peculiar effects of frost on *Ceanothus americanus* (American dittany), was mentioned by Stephen Elliot in 1824, by Sir John Herschel in 1833, explained by John LeConte in 1850, described by Lester F. Ward in 1893 and further explained by W. W. Coblentz in 1914 as follows: Water rises through sap ducts of the woody shell (not in the pith as thought by LeConte) by capillary action and not by root absorption. The water passes out through minute openings, not by a slit in the stem. The ribbons begin as crystals which first form a fringe, then a ribbon of fibrous white or transparent snow.—*A. M. Taylor.*

5452. WILSON, H. W. Studies on the transpiration of some Australian plants. *Proc. Roy.*

Soc. Victoria 36²: 1924.—The results of the experiments show that so long as the available water supply is adequate, the plants have no special powers of accommodation, for as the temperature rose the transpiration rate increased to the limit of the transpiring power of the plant for that temperature. Some plants have their transpiration checked when the velocity of the wind rises above 20 miles per hour. The phyllodia of the acacias, and the branchlets of the casuarinas are perfect transpiring organs, and the plants have a relatively high transpiring rate; with these should be associated the eucalypts. The so-called xerophytic plants of Australia are provided with a high average number of stomata, which enables their transpiration rate to respond quickly to changes of temperature and water supply, and they are well protected by their tough outer coverings, in some cases assisted by glands, from injurious loss of water.—(From *Australian Sci. Absts.*)

MINERAL NUTRIENTS AND SALT RELATIONS

5453. BERTRAND, GABRIEL, ET MME. M. ROSENBLATT. *Recherches sur les variations de la teneur en manganèse des feuilles avec l'âge.* [Variations in the manganese content of leaves with age.] *Ann. Inst. Pasteur* 36: 494–501. 1922.—Leaves of a great variety of plants, annuals, biennials, and perennials, herbaceous and woody, the latter including both deciduous and evergreens, were analyzed for their Mn content at different stages of their development. The plants analyzed fall into 4 groups as follows: The Mn content of leaves in group I, including such plants as the beet and the aucuba, is highest in the very young leaves and decreases steadily with age; in group II, containing such plants as ivy, iris, box, yew, etc., the Mn content decreases at first with the age of the leaf, then begins to increase gradually until it becomes as high as, or in some cases even higher than, that of the young leaves; in group III, including such plants as the chestnut, syringa, privet, etc., the Mn content of the leaves increases rapidly at first, reaching a maximum when the leaves are still young, then decreases gradually until it reaches a figure lower than that of the very young leaves; finally, in group IV, the Mn content of the leaves increases steadily with age without any fluctuation.—A. G. Plakidas.

5454. BERTRAND, GABRIEL, ET MME. M. ROSENBLATT. *Sur la répartition du manganèse dans l'organisme des plantes supérieures.* [The distribution of manganese in the organs of higher plants.] *Ann. Inst. Pasteur* 36: 230–232. 1922.—This paper presents additional evidence to show that Mn enters into the physiology of higher plants. Two kinds of plants were chosen, a dicotyledon, *Nicotiana rustica* L., and a monocotyledon, *Lilium lancifolium rubrum*. The individual plants were all grown under identical conditions and were harvested at the same time, to avoid variability due to environment or age. The Mn content of the different parts of the plant was then determined by the common analytical methods. The highest percentage of Mn was found in the organs in which biochemical activities are most intense. Thus, the flower parts contained more Mn than the leaves, young leaves more than old, and green portions of stems more than woody parts.—A. G. Plakidas.

5455. BOHN, P.-R. *Sur la présence de cristaux d'oxalate de calcium à la surface de certaines Caryophyllacées.* [Presence of crystals of calcium oxalate on the surface of certain of the Caryophyllaceae.] *Compt. Rend. Acad. Sci. Paris* 181: 135–137. *Fig. 1–2.* 1925.—Calcium oxalate crystals are usually found in the interior of the cell and rarely in the cell membrane. Up to the present the only case recorded of their being on the surface is that of *Mucor*. However, the author now finds that in 2 species of *Lychnis* and in 1 of *Spergula* (Caryophyllaceae) they occur in the cell, in the wall and on the surface of the epidermal cells. This confirms the view that they are waste products.—C. H. Farr.

5456. COLIN, H., ET A. GRANDSIRE. *Minéralisation des feuilles vertes et des feuilles chlorotiques.* [Mineralization of green and of chlorotic leaves.] *Compt. Rend. Acad. Sci. Paris* 181: 133–135. 1925.—Chestnuts and variegated elms were studied with relation to congenital chlorosis or albinism. Analyses were made of organic and mineral matter in green and yellow leaves, respectively, and the ratio between them was calculated. In green leaves the organic matter is always higher; in yellow leaves the mineral matter is usually higher.

The ratio of mineral to organic matter is always higher in yellow leaves: $\frac{M}{O}$ is 0.070–0.094 in

green leaves and 0.103–0.176 in yellow. The soluble bases are much more abundant in leaves lacking in chlorophyll, but the green leaves have more soluble and insoluble bases. Determinations were made of the respective elements in the ash. Green leaves have much more Ca and much less K. The P is about equal in the spring, but becomes more abundant in chlorotic leaves during June and July.—*C. H. Farr.*

5457. DOWDING, E. S. The regional and seasonal distribution of potassium in plant-tissues. (Abstract.) *British Assoc. Adv. Sci.* 1924: 446. 1925.

5458. HARRISON, G. J., AND C. J. KING. Age of seedlings as a factor in the resistance of maize to sodium chloride. *Jour. Agric. Res.* 31: 633–640. *Fig. 1.* 1925.—Water culture methods employed are described, together with detailed results of experiments with maize seedlings subjected to various concentrations of NaCl solutions up to 2.2%. Seedlings, ranging in size from radicles 25 mm. long to the appearance of the 2nd true leaf, were employed in this study. The smallest and most advanced stages of growth proved to be the most susceptible to salt solutions of high concentration, and the intermediate stages the most resistant. Early mutilation of the radicles, either artificial or by subjection to concentrated salt solution, was found to be a factor of resistance, as, also, were variable weather conditions.—*G. J. Harrison.*

5459. HOAGLAND, D. R. Some phases of the inorganic nutrition of plants in relation to the soil solutions. I. The growth of plants in artificial culture media. *Sci. Agric.* 6: 141–151. *Tables.* 1926.—This is the 1st of 2 lectures delivered at the Fifth Annual Convention of the Canadian Society of Technical Agriculturists, June, 1925.—*L. W. Kephart.*

5460. ILJIN, W. S. The influence of salts on the alternation of concentration of cell-sap in plants. *Studies Plant Physiol. Lab. Charles Univ. [Prague]* 2: 5–25. 1924.—The experiments reported represent a further elaboration of the author's previous contention that (1) the disappearance of plasmolysis and (2) the increase of osmotic pressure depend not only on the penetration of substance from without, but also on the physiological processes within, induced by the entering of the substance. Elements of monovalent metals cause the appearance of osmotically active substances in the cell. It is supposed that the ions of these salts activate the ferments that effect the hydrolysis of polysaccharides, converting them into monosaccharides. Such acceleration of hydrolysis is not induced by elements from the 2nd group such as Ca and Mg, and moreover these are observed to suppress the action of the elements of the 1st group due to the phenomenon of antagonism. The author states that "the action of salts on living cells is in intimate relation to the phenomenon of adsorption. Salt enters into close contact with the colloids of the cells and differentiates their properties." On account of the influence of salt solutions in provoking the formation of osmotically active substances within the cell, it is impossible to ascertain the degree of penetration of a given salt by observing the plasmolysis occurring in a cell when immersed in a solution of that salt.—*P. D. Strausbaugh.*

5461. PEMBER, F. R., AND F. T. McLEAN. Economical use of nitrogen, phosphorus and potassium by barley, oats and wheat in solution cultures. *Rhode Island Agric. Exp. Sta. Bull.* 199. 1 53. 1925.—The plants were trimmed to 1 stalk and grown to maturity in the greenhouse beginning February to March; the latter matured 2–4 weeks sooner than the earlier. Increasing the total osmotic pressure of the culture solution from 0.25 to 1.50 atmospheres did not make any significant difference in growth. Shive's R_5C_2 solution resulted in plants of abnormal appearance and only moderate yield. The approximate minimum N requirement for high yield was for oats, 0.7%; for wheat, 1.0%; and for barley, 1.0% of the total dry matter. The minimum P requirement for high yields was 0.1% of phosphorus pentoxid in the dry matter for oats, and 0.2% for wheat and barley. The minimum K requirements were for oats, 0.5%; for wheat, 0.6%; and for barley, 0.7% of potassium oxid in dry matter. Both N and K content of the culture plants were quite similar to corresponding values for field grown plants, but the P content of the solution cultures was about $\frac{1}{3}$ that of field cultures.—*B. L. Hartwell.*

5462. PRÁT, SILVESTŘ. Několik pozorování na *Caulerpa prolifera*. [Some observations on *Caulerpa prolifera*.] *Studies Plant Physiol. Lab. Charles Univ. [Prague]* 2: 36–46. 2 pl. 1924.—*Caulerpa prolifera* is very sensitive to the dilution of sea water. If a normal plant is

placed in fresh water, bubbles form in the young leaves, a break of the membrane conjunction being caused by the osmotic ingress of water. If the leaves are only washed in fresh water and left without water in damp air no bubbles appear. These bubbles form if 20% of fresh water is introduced into the sea water medium. The author observes that protoplasmic streaming throughout the whole plant is very similar to the circulation of the blood in animals but when the plants were injected with various stains there seemed to be no diffusion of the coloring matter even after several days had elapsed. Sea water containing potato starch in suspension was injected into the leaves but no changes were observed during 14 days. Mention is also made of a central substance occupying the place of the vacuole between the wall protoplasm. This substance coagulates in fresh water and when the membrane conjunctions are broken a ring of coagulated central substance forms around the bubble.—*P. D. Strausbaugh.*

PHOTOSYNTHESIS

5463. BALY, E. C. C., AND ELIZABETH SIDNEY SEMMENS. Selective action of polarized light upon starch grains. *Nature* 116: 817. 1925.—Reference is made to a criticism by Nielson Jones (*Ann. Bot.* 39: 651) on the authors' report of starch grains hydrolysed by polarized light. They have now shown that starch grains in pure water are hydrolysed by a beam of polarized light and suggest that it must be due to a selective absorption of polarized radiant energy by the optically active starch grains. Several other authors who have indicated various effects of polarized light are quoted.—*O. A. Stevens.*

5464. BOVIE, W. T. Effect of sunlight on growth and development. *Scientific Monthly* 21: 70-89. 13 fig. 1925.—Separate groups of chickens were treated as follows: (1) Raised in open sunlight, (2) exposed for 20 minutes a day to rays of a quartz mercury vapor lamp, (3) exposed only to sunlight filtered through glass. At the end of a month only those in the first 2 groups were normal, and the differences became greater as time continued. The difference seems to be determined by presence or absence of the ultra-violet rays of shorter length. Results of experiments with plants indicate that light produces a photochemical product. Only the tip of a seedling is sensitive but the bending takes place back of the tip, hence the product seems to be produced in the tip and transferred to older cells. Such stimulus can be carried across freshly cut surfaces. The author used original apparatus by which increases of $\frac{1}{1000}$ inch in length could be recorded. Growth occurred at regular and definite periods, mostly at night. Growth and differentiation are independent processes. Excess light may retard growth and increase differentiation, resulting in monsters. Less mechanical tissue is developed in absence of light. Normal growth of plants depends on ultra-violet rays as well as upon heat energy.—*A. M. Taylor.*

5465. COMBES, RAOUL. La lumière exerce-t-elle une action directe sur la décomposition de la chlorophylle des feuilles en automne? [Does light exercise a direct effect on the decomposition of the chlorophyll of leaves in autumn?] *Compt. Rend. Acad. Sci. Paris* 181: 129-130. 1925.—Wiesner thought that chlorophyll was continually being destroyed and formed by the action of light. Willstater and Stoll on the other hand have regarded it as stable. Wurmser has explained this stability as due to the protective effect of the colloids against photo-oxidation of chlorophyll. Chestnut leaves were studied. It is concluded that light has no effect on the disappearance of chlorophyll in the autumn. The difference in behavior of branches in the sun and in the shade, respectively, is due to the effect of light on the nutrition of the leaves during the vegetative period and not to the direct effect of chlorophyll in autumn. Leaves in the sun yellow more quickly than those in shade because of the condition of nutrition bringing them more quickly to a state of maturity, of which the yellowing is an external manifestation.—*C. H. Farr.*

5466. HARRIS, D. T. The biological action of light. *Sci. Monthly* 21: 503-505. 1925.—The author discusses briefly the effect of infra-red rays in producing sunstroke and of ultra-violet in sunburn. Sunburn is followed by pigmentation which immunizes the skin to further burns. This may indicate the mode of evolution of highly pigmented races. He takes up also the destructive action of ultra-violet rays on bacteria, their influence in growth of animals and in prevention of rickets, and the difference in effects between ultra-violet rays and X-rays.—*A. M. Taylor.*

5467. LEWIS, F. J. The behaviour of chloroplasts and other cell-contents at low temperature. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 449. 1925.

5468. LUBIMENKO, V. Sur l'adaptation chromatique chez les algues marines. [The color adaptations of marine algae.] Compt. Rend. Acad. Sci. Paris 181: 730-732. 1925.—Spectrometric determinations of chlorophyll were made on plants collected at Banyuls-sur-Mer on the Mediterranean Sea. *Zostera* at the same depth contained 2.93 gm. of chlorophyll per kilo of fresh leaf; *Posidonia*, 2.73. Considering 2.83 as 100%, the various algae were compared with these phanerogams. The average amount varied from 18% in the red algae to 37% in the green. The blue algae were 29% and the brown 30%. A study of certain red algae was made to determine the relative amounts of chlorophyll and phycoerythrin. The ratio of the latter to the former is 6% in *Corallina* and 66% in *Plocamium*, with other species between. It is concluded that the chromatic adaptation of the red and brown algae is manifested by a diminution in the chlorophyll and its replacement by other pigments.—C. H. Farr.

5469. MICHEL-DURAND. Influence de la lumière sur la formation des tannins. [Influence of light on formation of tannins.] Compt. Rend. Acad. Sci. Paris 181: 1171-1173. 1925.—Analyses were made of the entire plant and of the leaves, stems and roots separately, of chestnut seedlings grown in light and in darkness. In all cases more tannin is formed in light than in darkness, except that in the leaves more water-soluble tannins were formed in darkness than in light. The acetone-soluble tannins are, however, always markedly more abundant in plants grown in light than in darkness.—C. H. Farr.

5470. ROUGE, E. Recherche des premiers produits de l'assimilation chlorophyllienne du carbone. [A study of the first products in the chlorophyll assimilation of carbon.] Jour. Suisse Pharm. 59: 157-161, 175-178. 1921.—The author briefly reviews the theories upon carbon assimilation (photosynthesis), discusses first von Bayer's theory that the first product is formaldehyde and shows that this is highly improbable, then in the order named, he discusses glycolic aldehyde, glyceryl aldehyde and dioxyacetone as probable first products. He shows that glycolic aldehyde exists in a free state in leaves, quite abundantly when they are photosynthesizing and relatively less when not. Tests for glyceryl aldehyde and dioxyacetone show that neither of them are present. The 2 latter and also formaldehyde being eliminated, it appears very probable that glycolic aldehyde is the first product in carbon assimilation. The author, however, emphasizes the fact that further research will be necessary to prove whether this is true.—Charles C. Plitt.

5471. WURMSER, RENÉ. Sur l'activité des diverses radiations dans la photosynthèse. [The activity of different radiations on photosynthesis.] Compt. Rend. Acad. Sci. Paris 181: 374-376. 1925.—In weak illumination the rate of photosynthesis is regulated by the primary photochemical reaction. By determining the relation of the rate of assimilation to the energy of the absorbed rays one can study the mode of action of the different radiations on this primary phenomenon. This can be done by determining the quantity of CO₂ reduced in a given time and the energy of light absorbed by the chlorophyll in the same length of time. The CO₂ absorption was determined by the liberation of O from algae such as *Ulva*, by the method of Winckler. The incident intensity of light is determined by an electric thermo-pile. The amount of light absorbed by the chlorophyll is found by decolorizing some specimens by exposure to intense light and comparing the absorption of light by these to that by normal tissues. A screen of water 0.5 mm. thick filters out the infra red. Results show a higher yield in green light, 490 to 590μμ, than in red light, 590-700μμ, in the ratio of 1.15.—C. H. Farr.

METABOLISM (GENERAL)

5472. BORNEMANN. Zur Kohlenstoffernährung der Kulturpflanzen. [Carbon nourishment of cultivated plants.] Zeitschr. Forst.- u. Jagdw. 56: 376-378. 1924.—A reply to Albert's article "Zur Kohlensäurefrage" in: Ibid, December, 1923. The experiments of Spigatis on the relation of carbon availability to production are criticized, also Albert's assumption that increased production resulting from an increase in available carbon occurs only with decrease in light.—J. Roesser.

5473. BRIEGER, FRIEDRICH. Über den Silicium-Stoffwechsel der Diatomeen. [Silica assimilation of diatoms.] Ber. Deutsch. Bot. Ges. 42: 347-355. 1921.—In general, additions

of silica augment the growth of diatoms. This is, however, not true of comparatively high concentrations of alkali silica in the form of potassium silicate. The injurious effect is probably due to the high concentration of the OH-ions. Medium concentrations have optimum effects. The maxima, optima, and minima percentages of potassium silicate vary with the different species.—*H. L. Blomquist.*

5474. BRIEGER, FRIEDRICH. Untersuchungen über den Wundreiz. [Investigations on wound stimulus.] Ber. Deutsch. Bot. Ges. 42: 79-90. 1924.—Parts of different organs of various plants were cut off and cultivated for several weeks in water or juices from the respective plants and plant parts. Anatomical and microchemical studies were made of the wound reactions. The differences in the morphological effects observed in the different plants were found to be quantitative only and agree in general with the results obtained by Haberlandt and others. Microchemical studies showed the following substances to appear or markedly increase: mucilage, oxidase, and diastase. In some cases mucilage formation is so abundant that it interferes with the anatomical changes which usually accompany wounding and this situation the author calls "over-stimulation." He also points out the correlation between the different reactions observed.—*H. L. Blomquist.*

5475. COLIN, H., ET A. GRANDSIRE. Caractères chimiques des feuilles vertes, des feuilles jaunes et des feuilles rouges. [The chemical characters of green, yellow, and red leaves.] Compt. Rend. Acad. Sci. Paris 181: 1168-1170. 1925.—In the autumn there may be found even on the same carrot plant, green, red, and yellow leaves, respectively. The chlorotic leaves are found to contain less sugar and more water and ash than do the normal leaves. The red leaves, on the other hand, have more sugar and less water and ash than the normal. The ratio of reducing sugars to sucrose is highest in the yellow and lowest in the normal. The osmotic pressure as judged by molecular concentration and also by freezing point methods is greatest in the yellow and lowest in the normal, as is also the electrical conductivity. Soluble alkalies are most abundant in the ash of the green leaf and least in the yellow. The highest percentage of Ca in the ash occurs in the green leaf, and the lowest in the red.—*C. H. Farr.*

5476. DRZEWINA, ANNA, ET GEORGES BOHN. Sur l'acidification du milieu par cytolysé cellulaire. [Acidification of the media by the cytolysis of cells.] Compt. Rend. Acad. Sci. Paris 181: 692-694. 1925.—A study of *Convolvula* with KCl.—*C. H. Farr.*

5477. HÉRISSEY, H., ET J. CHEYMOL. Sur les sucres fournis par la géine. [The sugars produced by geine.] Compt. Rend. Acad. Sci. Paris 181: 565-566. 1925.—A glucoside produced from eugenol, which is extracted from the underground parts of *Geum urbanum*, yields upon treatment with gease a sugar, vicianose. This is the 2nd source found for this sugar.—*C. H. Farr.*

5478. HUTCHINSON, C. M., AND RAMAYYAR, C. S. Losses of sugar by inversion in sugar factories in northern India and its prevention by antiseptic measures. Agric. Res. Inst. Pusa Bull. 163. 1-9. 1925.

5479. LELIÈVRE, J., ET Y. MÉNAGER. Application aux *L. flexicaulis* de la méthode d'analyse par combustion. [The analysis of *Laminaria flexicaulis* by the combustion method.] Compt. Rend. Acad. Sci. Paris 180: 536-538. 1925.—The paper is divided into 3 parts as follows: Confirmation of the increase in iodine; formation of a volatile tin compound; the influence of the stipo-frondal zone.—*C. H. Farr.*

5480. MAILLARD, L.-C., ET H. WUNSCHENDORFF. Sur la formation de complexes entre les protéines en les hydrates de métaux trivalents. Méthode de désalbumination par les alums. [The formation of complexes between proteins and the hydrates of trivalent metals. The method of disalbumination of alums.] Compt. Rend. Acad. Sci. Paris 181: 941-942. 1925.

5481. PETIT, P. Sur la liquefaction de l'empois d'amidon. [The liquefaction of starch.] Compt. Rend. Acad. Sci. Paris 181: 259-260. 1925.—Liquefaction of starch is found to be possible in very dilute solutions of mineral salts by regulating the acidity of the medium. This paper describes the technique.—*C. H. Farr.*

5482. PETIT, P., ET RICHARD PETIT. Influence du mode de dissolution de l'amylase sur la saccharification de l'amidon. [Influence of the mode of dissolution of amylase on the saccharification of starch.] Compt. Rend. Acad. Sci. Paris 181: 575-577. 1925.

5483. PICTET, AMÉ, WERNER SCHERRER, ET LOUIS HELFER. Sur la présence de l'argon

dans les cellules vivantes. [The presence of argon in living cells.] Compt. Rend. Acad. Sci. Paris 181: 236-238. 1925.—Argon was previously reported by the authors as present in the products of alcoholic fermentation. This study reports its existence within the yeast cells, and also in various animal tissues. It is regarded as being present, not as in a compound, but in the gaseous state within the cells.—C. H. Farr.

5484. PRATT, C. A. The staling of fungal cultures. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 445. 1925.

5485. SAMEC. Sur l'hydrolyse enzymatique des amylophosphates naturels et synthétiques. [The hydrolysis of the natural and synthetic amylophosphates.] Compt. Rend. Acad. Sci. Paris 181: 532-533. 1925.

5486. SENFT, EM. Mnioidikan, ein neuer pflanzlicher Farbstoff. ["Mnioidikan," a new plant pigment.] Studies Plant Physiol. Lab. Charles Univ. [Prague] 2: 95-100. 1924.—When a specimen of *Mnium stellare* is placed in water for a time it assumes a dark blue color. No phenomenon of a similar nature is known to occur in any other species of *Mnium*. For the pigment involved the author proposes the name, "Mnioidikan." If the tissue is treated with a 75% solution of chloral hydrate, the color quickly disappears and there forms in the cells a crystalline precipitate which gives rise to groups of needle crystals of a dirty violet color. This reaction is typical and was obtained even with herbarium material 40 years old. The experiments show that the coloration induced is not the result of enzymic activity. Owing to the lack of living material it was not determined whether the chromogen was formed only following the death of the tissues or in living plants as well.—P. D. Strausbaugh.

5487. SENFT, EM. Über gefarbte Membranen der Moose aus der Familie der Mnia. [Colored membranes in mosses in the Mnium family.] Studies Plant Physiol. Lab. Charles Univ. [Prague] 2: 101-106. 1924.—Microscopic examinations of the leaves of almost all the European species of *Mnium* reveal the presence of single cells or groups of cells that are distinctly set off from the neighboring tissues and sharply outlined by the coloration of the limiting membranes. The character of the cell walls and the nature of the cell content differs considerably, and the coloration is likewise variable. These characteristics indicate a diseased condition induced by external or internal influences. Those species in which the leaves possess a red midrib produce a red color in the diseased cells, and those in which the midrib of the leaf is green similarly manifest a yellow to brown color. The author believes that the coloration is due to the presence of a phenolic substance which can appear in the membranes of the Mnium species in 2 modifications, each of which can combine with ferric chloride forming different colored compounds varying from brown to violet, with many intervening color grades. These substances are thought to perform a function similar to that of sphagnol in serving as protective materials in case a wounding of the leaf occurs. The Mniums can be divided into 3 groups according to the color reaction of their membranes with ferric chloride and the same classification holds equally well for the morphological characters.—P. D. Strausbaugh.

5488. TERROINE, EMILE-F., R. BONNET, ET A. HEE. Rendement énergétique dans le développement de divers organismes végétaux en fonction de la teneur en oxygène du milieu ambiant. [The energy yield in the development of diverse plants as a function of the oxygen content of the ambient medium.] Compt. Rend. Acad. Sci. Paris 181: 685-687. 1925.—It has been found that the expenditure of energy is a function of the external conditions of combustion; but that the influence of the quantity of combustible matter on the expenditure of energy of metabolism, observed in the homeotherms, is not a phenomenon common to all living things. The question remains to be settled if the variation in the oxygen of the ambient medium modifies the degree of metabolism and hence the growth, a variation corresponding to the raw energy production of the process. *Sterigmatocystis nigra*, and the germinating seed of lentils and soybeans were used. The study shows that the value of the energy yield is constant regardless of the oxygen concentration of the ambient medium, which varied in the experiments from that of ordinary air to 100%.—C. H. Farr.

5489. WALTON, G. P. A chemical and structural study of mesquite, carob, and honey locust beans. U. S. Dept. Agric. Dept. Bull. 1194. 1-19. Pl. 1-2. 1923.—The mesquite (*Prosopis* sp.) has overrun millions of acres of the southwestern arid region of the U. S. A., and great quantities of the fruit or "beans" go to waste each year. This study was designed

to promote the utilization of these beans by making available information on their morphology, chemical composition and feeding-value. Chemical analyses with brief discussions of the fruits of the related legumes, honey locust (*Gleditschia triacanthos*) and carob (*Ceratonia siliqua*) are included. A discussion of the taxonomy of the mesquite includes a statement prepared for this publication by C. V. PIPER. All comment regarding the actual feeding-value of the beans is referable to the previous literature, which is reviewed in detail. It is suggested that meal made from ground whole mesquite beans may serve as an emergency or supplementary food for stock. As a result of the laboratory work, it is concluded that the fruit of the mesquite consists of at least 2 different types of food material, the sugary pericarp or pod, rather fibrous and containing little protein, and the high-protein seed. Means were developed and are described for separating the fruit by simple machinery into pod material and seed; and for milling the seed for the production of a high-protein kernel flour and a "bran" consisting of the seed coats. Incidentally, crystalline sucrose was prepared from the pod fraction after elaborate purification of an aqueous extract. Analytical data of interest are (on the dry basis): Mesquite pod fraction (83% of the fruit), 17% sucrose, 19% pentosans; seed coats (7.4% of the fruit), 16% pentosans, 23% galactans; seed kernels (8.3% of the fruit), 7% fat, 70% crude protein. The pods of the honey locust and carob contained about 23% of non-reducing sugar calculated as sucrose, while the whole fruit of the carob contained only $\frac{1}{3}$ as much protein as that of either the mesquite or honey locust.—G. P. Walton.

METABOLISM (NITROGEN RELATIONS)

5490. ARBUCKLE, H. B., and O. J. THIES, JR. Variation of protein content of corn. Jour. Elisha Mitchell Sci. Soc. 38: 84-87. 1922; 39: 56-62. 1923; 40: 176-180. 1924, 41: 64-69. 1925.—In the first paper the authors describe a modification of the Kjeldahl method for more rapid determination of nitrogen in corn. Analyses of varieties of corn grown in North Carolina and in West Virginia result in no definite conclusion as to influence of climate on N content. The following papers continue this analysis of varieties grown in the 2 states, but variation, while considerable, does not point clearly to any climatic cause. Analyses to show effect of fertilizers indicate only slight gains in N from nitrogenous applications. Immature grains are low in N; grains from middle region of ear are highest. It is obvious that the authors are handicapped by dealing with a problem with too many obscure and indeterminable factors.—W. C. Coker.

METABOLISM (ENZYMES, FERMENTATION)

5491. BRIDEL, MARC. Sur la présence, dans l'émulsine des amandes, de deux nouveaux ferments, la primevérosidase et la priméverase. [The presence in the emulsin of almonds, of two new enzymes, primeverosidase and primeverase.] Compt. Rend. Acad. Sci. Paris 181: 523-524. 1925.—In aqueous solutions, the emulsins of almonds hydrolyse monotropitoxide if the action is sufficiently prolonged and a large quantity is employed. The hydrolysis is not arrested at primeverose, but this in turn is hydrolysed into glucose and xylose. This emulsin thus contains 2 enzymes.—C. H. Farr.

5492. BRIDEL, M., ET C. CHARAUX. Le produit fermentaire extrait des graines de diverse *Rhamnus* ou rhamnodiastase. [The enzymes extracted from seed of various species of *Rhamnus*, that is, rhamnodiastase.] Compt. Rend. Acad. Sci. Paris 181: 925-926. 1925.—Rhamnodiastase is a complex of various ferments having specific action on certain glucosides.—C. H. Farr.

5493. HANSSEN, F. S. The bactericidal property of milk. British Jour. Exp. Path. 5: 271-280. 1924.—In experiments conducted at F. G. Gade's Pathological Institute, Bergen, Norway, the bactericidal properties of about 70 samples of milk were tested, using *Bacillus typhosus* and 2 strains of *B. paratyphosus*. Bactericidal properties were demonstrated in fresh milk during the first 4 hours at 37°C. and for a longer period at room temperature. Such properties were destroyed by heating the milk to 75° for 15 minutes, but milk heated to 70° for the same length of time was still active. It is suggested that the bactericidal properties are in close relation to the oxidizing enzymes in the milk. Much variation was found to exist in the

ability of milk to retard bacterial growth during different seasons of the year and in the resistance of different strains of bacteria to this action.—*Arthur P. Miller (From Exp. S. a. Record).*

5494. MAIGNON, F. *Nouvelles recherches sur l'électrolyse des diastases et leur teneur en acide phosphorique et silice.* [New researches on the electrolysis of enzymes and their phosphoric and silicious acid content.] *Compt. Rend. Acad. Sci. Paris* 181: 51-53. 1925.—Amylase of barley, and animal enzymes are used. Electrolysis results in loss of all activity. This loss is not due to the formation of inhibiting substances, but to electrolytic dissociation of the organic mineral constituents of the enzymes. Phosphates and in less proportion silicates occur in the ash of diastase.—*C. H. Farr.*

5495. MEGURO. *Composition de l'alexine: Action de la levure (Saccharomyces) sur l'alexine.* [Composition of alexine: Action of yeast (*Saccharomyces*) on alexine.] *Ann. Inst. Pasteur* 37: 946-966. 1923.

5496. MÜLLER, D. *Ein neues Enzym—glykoseoxydase—aus Aspergillus niger.* [A new enzyme, glycooxydase, from *Aspergillus niger*.] *K. Vet. Landbhsk. Aarbog [København]* 1925: 329-331. 1925.—The enzyme is isolated by crushing and pressing cultures which have for 6 hours starved on water. By alcohol-ether it is precipitated as a fluffy, white powder which can be kept in the exsiccator for months. In solution, glucose, but not other monosaccharids nor aldehydes, decreases, while carbonic acid is absorbed and another acid, probably gluconic acid, is formed.—*Ernst Gram.*

5497. POWICK, WILMER C. *Inactivation of vitamin A by rancid fat.* *Jour. Agric. Res.* 31: 1017-1026. *Fig. 3.* 1925 [1926].—In each of 3 experiments a number of white rats, selected for uniformity as to age, weight and general health, were divided into 2 lots in such manner that each rat in the 1st lot should have as far as possible its counterpart as to sex and parentage in the 2nd lot. One group, used as controls, received a ration that was adequate to all intents and purposes and contained 16-25% of fresh lard, while the other group received a similar ration containing a corresponding amount of strongly rancid lard. Dried egg yolk was used as the source of vitamin A, and was supplied in excess to all animals. In Experiments 1 and 3, the several ration components were thoroughly mixed before feeding, while in Experiment 2, the egg yolk was fed separately. The control rats in all experiments grew normally. In Experiment 1, the "rancid" rats grew subnormally and 1 rat developed ophthalmia on the 88th day, while postmortem examinations of 2 rats were negative except as to undernutrition. In Experiment 3, all of the "rancid" rats grew subnormally and developed ophthalmia by the 45th day. In Experiment 2, where the vitamin A was fed separately, none of the rats in the rancid series developed ophthalmia, the 2 females growing normally and the 2 males subnormally. It is concluded that the rancid fat was not actually toxic to white rats but that it inactivated, presumably by oxidation, the vitamin A of the rations with which it was admixed.—*Author.*

5498. SALMON, W. D., AND EMERSON R. MILLER. *The water-soluble vitamin content of the velvet bean.* *Jour. Agric. Res.* 31: 793-799. *Fig. 1-10.* 1925.—Polyneuritic pigeons were cured by velvet beans and by alcoholic or acetic acid extracts of velvet beans. Two grams of velvet beans per day afforded complete protection to pigeons weighing 220-270 gm. on a diet of polished rice; 10% of velvet beans in the diet as the sole source of vitamin B was slightly more than sufficient for maintenance of young rats; 20% enabled the rats to grow at approximately $\frac{1}{2}$ the normal rate. Large amounts of the beans were harmful to both pigeons and rats but the harmful effect was lessened by cooking or autoclaving the beans.—*Author.*

5499. SHUNK, I. V. *Methods for class demonstration of hydrogen sulfide formation by bacteria.* (From *Proc. North Carolina Acad. Sci.*) *Jour. Elisha Mitchell Sci. Soc.* 40: 107. 1924.—The following medium is recommended: Distilled water, 1000 cc.; meat extract, 3.0 gm.; Difco peptone, 10.0 gm.; sodium thiosulphate, 2.5 gm.; ferrous sulphate, 0.4-1 gm.; agar-agar, 15.0 gm. On this medium *Eberthella typhi* and *Salmonella paratyphi*, for example, give a dense blue-black streak in 18-36 hours.—*W. C. Coker.*

5500. SMITH, R. GREIG. *The high temperature organism of fermenting tan-bark.* Part iv. *The effect of chill.* *Proc. Linn. Soc. New South Wales* 43: 623-633. 1923.—The inability of the high temperature organism to ferment solutions of citrate was traced to the fact that the bacterium was sensitive to chill. Taken from the incubator at 60°C. and distributed in

fluid at the laboratory temperature, it was so affected that, while capable of existing or growing slightly, it was unable to ferment the organic salt. Although large additions of young cultures and large additions of suspended cells of older cultures, when chilled, failed to induce fermentation, small seedings and additions were quite active.—(*From Australian Science Absts.*)

METABOLISM (RESPIRATION, AERATION)

5501. BROWN, J. HOWARD. A study of anaerobic bacteria. *Jour. Bact.* 10: 513-542. 1925.—The author made a cultural and biochemical study of several species of obligate anaerobes. Neither determinations of titrable acidity nor of H-ion concentration were found to be good criteria of fermentation of sugars. The disappearance of the carbohydrate is the best evidence of fermentation. Formal titration rather than amino acid or ammonia determination was recommended to be used as an index of proteolysis. In addition to the usual biochemical and cultural studies, the author made a study of the ability of anaerobes to hydrolyze the fat of cow's milk and found that more than $\frac{1}{2}$ of the strains studied were able to hydrolyze this fat.—*C. E. Skinner.*

5502. JACQUOT, RAYMOND, ET ANDRÉ MAYER. Équilibre des constituants cellulaires et intensité des oxydations de la cellule. Imbibition et oxydations. Cas des graines. [The equilibrium of cellular constituents and the intensity of the oxidations of the cell. Imbibition and oxidations. The subject of seed.] *Compt. Rend. Acad. Sci. Paris* 181: 931-933, 1925.—The degree of imbibition and intensity of oxidation as indicated by CO₂ liberation were studied and graphs are given for beans, corn, and peanuts. The species differ in the amount of water necessary to initiate CO₂ liberation and to support it at the maximum. The hydrobiotic yield for beans is 0.49 cc.; for corn, 0.42 cc.; and for peanuts, 0.48 cc. It is concluded that the intensity of oxidation in seed is dependent upon the proportion and not on the mass of the respective constituents.—*C. H. Farr.*

5503. KOSTYTSCHEW, S., ET M^{lle}. M. AFANASIEWA. Sur la respiration des microbes de la fermentation lactique. [The respiration of the microbes of lactic fermentation.] *Compt. Rend. Acad. Sci. Paris* 181: 61-62. 1925.

5504. MAYER, ANDRÉ, ET L. PLANTEFOL. Équilibre des constituants cellulaires et forme des oxydations de la cellule. Imbibition et types respiratoires chez les plantes reviviscentes. [The equilibrium of cellular constituents and the method of oxidations in the cell. Imbibition and respiratory types in revived plants.] *Compt. Rend. Acad. Sci. Paris* 181: 131-132. 1925.—It was previously shown that the intensity of cellular oxidations varies with imbibition, since there is a definite relation between the intensity and water content. The determination of the respiratory quotient is easy when the variation of atmosphere due to respiration is large, but it becomes very delicate when the intensity of exchange is at a minimum. The methods used were the gravimetric method of Haldane, the manometric method, and the eudiometric method of Laulanie modified by Plantefol. It is found that mosses saturated with water have a variable quotient from 0.75 to 1, according to previous physiological condition. If imbibition is only partial these conditions have no effect and the quotient is 0.85 to 0.95. If the amount of water imbibed is very low, for example, 0.25, the respiratory quotient is high, for example, 13.7. A study of the respiratory quotient of dry mosses was also attempted. It is found that a condition of anhydrobiosis leads to a process of anaerobiosis. If dry mosses are moistened the respiratory quotient falls in the course of several days to 1 and finally to 0.7.—*C. H. Farr.*

5505. NEWTON, J. D. The relation of the salt concentration of the culture solution to transpiration and root respiration. *Sci. Agric.* 5: 318-320. 1925.—The experiments show that the rate of plant root respiration, as related to transpiration, is increased when the concentration of the culture solution is increased. This indicates that as the concentration of the culture solution is increased, the plant roots must expend more energy in absorbing a given volume of solution. It is further shown that the rate of transpiration is decreased when the concentration of the culture solution is increased, and it is pointed out that the concentration of the soil solution is one of the factors governing water requirements of crops as the concentration of the soil solution may be modified to some extent by cultural and manurial treatments.—A bibliography of 6 titles is appended.—*Author's summary.*

5506. WOLFF, JULES, ET LUCIEN GRANDCHAMP. Quelques observations sur l'oxydabilité du fer contenu dans les vins. [Observations on the oxydizability of iron in wines.] Compt. Rend. Acad. Sci. Paris 181: 939-941. 1925.—A number of wines of different origin were submitted to the action of the glycerine extract of *Russula delica* and other fungi, resulting in the transformation of ferrous into ferric salts.—C. H. Farr.

ORGANISM AS A WHOLE

5507. BULLINGTON, W. E. A study of spiral movement in the ciliate Infusoria. Arch. Protistenk. 50: 219-294. 9 fig. 1925.—From a study of 164 species of ciliates and 1 suctorian the writer draws the following conclusions: All ciliates swim in spiral paths while swimming freely. The width, length and direction of this spiral is constant and characteristic in all species and in 81% of the genera, and the direction of spiraling is closely related to taxonomy of the organism. Left spiraling is more characteristic of ciliates than right spiraling. The direction and cause of a spiral are not influenced by the oral groove itself, its oblique position, stronger beating of the oral cilia, or shape of body. Larger ciliates most often swim in left spirals, and the same is true of ciliates with the greatest speed. The nature of the culture medium has no influence upon the cause or direction of spiral swimming, although left spiraling is more characteristic of marine forms than fresh water forms. Rotation of the body is not a device for enabling the organisms to move in perfectly straight paths. "The cause of both rotation on the body axis and the revolution on the axis of progression is the combined action of all the body cilia and is not due to the action of any one particular group of cilia. The direction of the beat of these cilia is obliquely backward to the right for forward movement in normal free swimming in a left spiraling ciliate, and obliquely forward to the left for backward movement.—R. P. Hall.

5508. EFIMOFF, W. W. Über Ausfrieren und Überkältung der Protozoen. [Freezing and chilling Protozoa.] Arch. Protistenk. 49: 433-446. 1925.—The writer describes the effects of low temperatures on *Paramecium caudatum*, *Stentor coeruleum*, *Dileptus anser*, *Colpidium colpoda*, *Stylonychia mytilus*, *Spirostomum ambiguus*. At -4°C . the ciliates die very rapidly. Such organisms are unable to spend the winter in a frozen condition. Short exposure to temperatures of -9° or higher does not injure the organisms. At 0° *Paramecium* divides about once in 13 days, and at this temperature the depression period lasts about 35 days. With long continued cooling, *Paramecium* rounds up, begins to swell, and the volume is usually increased 4-5 times. This is probably the result of osmotic processes. Sugar and NaCl do not penetrate the cell wall of *Paramecium*, and on the addition of these substances, and of glycerin, the organisms return to their normal form. The wall of a swollen *Paramecium* approaches the condition of a semipermeable membrane.—R. P. Hall.

GROWTH, DEVELOPMENT, REPRODUCTION

5509. DAVY DE VIRVILLE, A. Recherches sur la chute des fleurs non météoriques. [Studies concerning the fall of persistent flowers.] Rev. Gén. Bot. 37: 513-527. 1925.—Experimental observations on the fall of non-meteoric (persistent) flowers show it to be the result of diverse factors, depending on the proper duration of the flower which may be considered as constant for a given species. It depends on the action of mechanical factors such as wind and rain which in certain exceptional cases are able to cause the fall of all the flowers of a tree. Finally, raising the temperature tends to shorten the duration while lowering it increases the time the flower will persist; this may be explained by the fact that warm days are exactly those when pollination occurs most easily and it is well known that there is a direct relation between the persistence of the flower and its fecundation. From these observations, the conditions most favorable for the fall of non-meteoric flowers are realized when a period of bad weather with wind and violent rain succeeds a long period of pleasant days with high temperature. The observations were carried out on cherry, apple and *Robinia pseudacacia*.—J. C. Gilman.

5510. GARNER, W. W., AND H. A. ALLARD. Localization of the response in plants to relative length of day and night. Jour. Agric. Res. 31: 555-566. Pl. 1-4. 1925.—By means of ventilated, light-proof boxes having 3 sides removable, different portions of the primary stem

of *Cosmos sulphureus* were subjected simultaneously to different daily periods of illumination, and, in certain instances, to continuous darkness. When the upper portion of the plant was exposed to the full length of day of summer while the lower portion was exposed to only 10 hours of light daily, the latter soon flowered while the former remained vegetative. By reversing the light treatment the upper portion of the axis flowered while the lower portion remained vegetative. Similarly, exposure of the central zone of the axis to a long day while the upper and lower portions received only the short-day exposure, caused the former to continue to develop vegetatively, while both of the latter promptly flowered. By reversing this treatment the central portion of the axis was made to flower while both the upper and lower portions remained vegetative. Exposure of the upper portion of the stem to continuous darkness for 3 to 5 weeks while the lower portion received the short-day treatment, resulted in the development of flower buds in the upper, darkened portion. When, however, the lower portion of the axis was exposed to the action of the long summer day no flower buds appeared in the upper, darkened zone—W. W. Garner.

5511. HOOKER, HENRY D. **Plant growth.** Proc. Nation. Acad. Sci. [Washington, D. C.] 11: 710-713. 1925.—The author discusses various formulae for growth. A satisfactory formula should both fit actual growth curves well and correspond well to the nature of the growth process. Robertson's formula is not always adequate in the former respect, and Pearl and Reed's lacks "evident physiological significance." A formula is given for plant growth considered as "a consecutive reversible monomolecular reaction of the type: $u \rightleftharpoons v \rightleftharpoons \dots \rightleftharpoons w \rightleftharpoons x \rightleftharpoons y$," and the conditions are stated on which that formula reduces to Mitscherlich's formula for growth, to the formula for a simple monomolecular reaction, and to Robertson's formula for growth. If growth is a consecutive monomolecular reaction, accumulation of end products should retard the whole series of reactions; this conception is applied to the relation of carbohydrate accumulation to the rest period of plants and the differentiation of flower buds.—Howard B. Frost.

5512. MacDOUGAL, D. T. **Growth in trees.** Sci. Monthly 21: 99-103. 1925.—The writer discusses the growth mechanism and sap circulation. By use of a thermometer with bulb in contact with the cambium and a control outside the tree, he shows that the tree is never quite as cold as the cold outside air, nor quite as hot as the hot outside air. The temperature reaches its maximum and minimum 1-2 hours after the maximum and minimum of the air. Growth ceases in most cases when the tree temperature is below 45°F. A dendrograph, designed by the author, traces on paper each change in thickness. Shrinkage occurs up to afternoon, due to excess of transpiration over absorption. New cells are formed, cell pressure increases, and diameter increases. Climatic changes are recorded on a chart. Even destruction of leaves by insects or frost is recorded. For eastern America most trees have a growth period of 60-100 days.—A. M. Taylor.

5513. POWELL, A. L. **Light and plant growth.** Jour. Assoc. Chinese and American Engineers 5*: 39-41. 1924.—The theory is advanced that with the proper control of temperature and other important factors in plant growth, almost any plant may be made to flower and fruit in any season of the year in any region by the proper adjustment of light. From the practical standpoint the use of artificial light is purely a question of economics, for the increased income must be greater than or at least equal to the cost of the electric energy used. An unsolved problem is mentioned, namely, to determine the necessary minimum intensity of artificial illumination for producing the best results.—R. H. Porter.

5514. SCHELLING, NELLY JACOB. **Growth stimulation of *Aspergillus niger* by a vitamine B preparation.** Bull. Torrey Bot. Club 52: 291-310. Fig. 1-14. 1925.—A review is given of previous work on the effects of vitamins on various fungi. The present study shows that vitamine B is a stimulant to vegetative growth and to reproduction in *Aspergillus niger*. It was found also to stimulate growth in wheat seedlings and in *Lemna minor*. The effect on *Aspergillus* may be catalytic, that of an increased organic food supply, or that of a "stimulant in the sense that small amounts of toxic substances act as stimulants." The author rather accepts the last alternative.—P. A. Munz.

5515. ZOLLIKOFER, CLARA. **Die Beziehungen der postfloralen Blüten- und Fruchstielsbewegungen von *Tussilago Farfara* zur Befruchtung und Fruchtentwicklung.** [The relations

of the post-floral flower and peduncle movements of *Tussilago Farfara* to fertilization and fruit development.] *Vierteljahrsschr. Naturf. Ges. Zürich* 69: 227-250. 1924.—The initiation of positively geotropic curvature in the peduncle is dependent on fertilization. For the production of the normal maximum curvature, the development of $\frac{1}{3}$ – $\frac{1}{4}$ of the fruits on the head is sufficient. Removal of all the young fruits from the head inhibits the positive geotropic curvature.—*John H. Schaffner.*

MOVEMENTS OF GROWTH AND TURGOR CHANGES

5516. POPESCO, C.-T. *Sommeil et réveil comparés de feuilles primordiales chez les haricots greffés et non greffés.* [A comparative study of sleep movements of the primordial leaves of grafted and non-grafted beans.] *Compt. Rend. Acad. Sci. Paris* 181: 340-342. 1925.—This problem, never before methodically studied, is approached through 5 series of experiments. In one case after grafting, the leaves of the epibiote became folded within 3 hours, that is, at 7 P.M. and remained so for 4 days, opening at 7 A.M. The primordial leaves of the hypobiote, however, folded at 30 minutes after grafting and opened within 21 hours. Varietal difference, water content of tissues, and biologic state of the epibiote and hypobiote modify the results.—*C. H. Farr.*

5517. SOUČKOVÁ, MILADA. *Rapports corrélatifs entre la lame et la production des racines chez les feuilles isolées.* [Correlations between the blade and the production of roots in isolated leaves.] *Studies Plant Physiol. Lab. Charles Univ. [Prague]* 2: 26-35. 1924.—The author reports his experiments with leaves of *Vinca minor* and *Hedera Helix*, and from the data collected arrives at the following conclusions: The formation of roots determines the amount of growth in isolated leaves and the thickness of rooted leaves exceeds that of the leaves not rooted, although there is no change in the number of cell layers. Root development on isolated leaves also induces an increase in the xylem in the central bundle. In isolated, variegated leaves of *Vinca minor* rooted in sand, the green cells of the 2nd palisade layer are elongated in a characteristic manner. A decrease in transpiration influences the development of isolated leaves, for under this condition the thickening of the leaf is less, as is also that of the secondary xylem.—*P. D. Strausbaugh.*

GERMINATION, RENEWAL OF ACTIVITY

5518. BECQUEREL, PAUL. *La suspension de la vie des graines dans le vide à la température de l'hélium liquide.* [The suspension of life in seed in vacuo at the temperature of liquid helium.] *Compt. Rend. Acad. Sci. Paris* 181: 805-807. 1925.—The author reported in 1909 that seed of wheat, mustard, and lucerne can resist the temperature of liquid air ($-190^{\circ}\text{C}.$) for 6 weeks, and of liquid hydrogen ($-253^{\circ}\text{C}.$) for 77 hours. Now a study is made with liquid helium ($-126^{\circ}\text{C}.$) at which temperature the seed was placed in vacuo for $10\frac{1}{2}$ hours. It is found that these seed germinate equally as well as controls kept in vacuo or in free air. This supports the author's contention that life can be suspended without resulting in death.—*C. H. Farr.*

5519. BIBB, LEWIS B. *Long tube method of cultivating micro-organisms with observations on mobile colonies in liquid medium.* *Jour. Bact.* 10: 561-567. 1925.—Bacilli of the colon group have been cultivated in glass tubes 30 feet long and 3 mm. in diameter. These bacilli progress through the tube at a uniform rate, usually about 4 feet per day for Strain 3 and about 2 feet per day for Strain 4. Instead of diffusing uniformly through the tube the bacilli form one or more relatively compact turbid areas called "mobile colonies." Bacilli of certain strains regularly form mobile colonies of characteristic shape, and if such colonies are disturbed by twirling of the tube, they again form themselves into the usual shape after a few minutes.—*Author's summary.*

5520. BLUMQUIST, H. L. *Dormancy in the seeds of the persimmon.* *Jour. Elisha Mitchell Sci. Soc.* 39: 83-85. *Fig. 1-2.* 1923.—(See also *Abst., Ibid.* 38: 14. 1922.) The seed show a dormant period seeming to extend over 2 to several years. By removing a layer of the seed covering which caps the radicle, 100% prompt germination is secured.—*W. C. Coker.*

5521. CERIGHELLI, R. *Influence des conditions du milieu sur la germination des graines*

en absence de calcium. [Influence of the condition of the media on the germination of seed in the absence of calcium.] Compt. Rend. Acad. Sci. Paris 181: 728-730. 1925.—A study of the effect of sterilization of the media and of immersion in water, and of water vapor on the germination of seed in the absence of calcium.—A minimum of 2 mg. of CaSO_4 is found necessary for pea seedlings to utilize their reserve materials entirely. The lengths of the radicles of these seedlings were determined under these various conditions. It is found that whether the culture medium is or is not sterilized, whether the cotyledons are or are not submerged, and whether pure water or water vapor is present, the seed will not germinate and develop normally in the absence of calcium.—*C. H. Farr.*

5522. NICHOLS, SUSAN P. The effect of wounds upon the rotation of the protoplasm in the internodes of *Nitella*. Bull. Torrey Bot. Club 52: 351-363. Fig. 1-4. 1925.—Portions of *Nitella* plants were punctured with a steel needle and effects in the protoplasm were observed. An immediate retardation or cessation of the streaming movement was evident. Different effects were obtained depending on the sharpness of the needle, method of wounding, etc. Movement was not resumed simultaneously throughout the cell; after several punctures recovery was slower. It is possible that a toxic substance is formed by the injured protoplasm, which affects neighboring plastids and portions of the cell.—*P. A. Munz.*

5523. RANDOLPH, E. E. Investigation on the germinating and heating of cotton seed in warehouse storage. Jour. Elisha Mitchell Sci. Soc. 41: 124-128. 1925.—When good sound cotton seed are germinated the oil content (including both seed and seedling) drops from 19.5 to 16.75% during the first 3 days. In the next 3 days the drop is continued to 7.5%. About this time the seedling breaks through the seed coat. On the 15th day the oil is practically gone. In the usual slight warehouse heating, the oil content does not drop appreciably if the seed can be worked while still damp. If allowed to dry the loss is considerable.—*W. C. Coker.*

PHYSIOLOGY OF DISEASE

5524. ARNOLD, LLOYD, AND EMIL WEISS. Isolation of bacteriophage free from bacterial proteins. Jour. Infect. Diseases 37: 411-417. 1925.—It was not possible to eliminate all bacterial proteins from bacteriophage by use of homologous bacterial serum. The bacterial proteins were completely eliminated by a method of salting out with Na_2SO_4 . The presence of blood serum hastened the removal of the bacterial proteins. Trypsin does not destroy activity of bacteriophage. In antisera from injected purified bacteriophage there were no agglutinins, precipitins, or complement-fixing bodies against the bacteria or bacterial proteins of the homologous strain. The only antibodies developing from injections of bacteriophage are those antibacteriophagic in nature which neutralize lytic activity of the bacteriophage.—*R. L. Starkey.*

5525. BECKWITH, T. D., AND E. J. ROSE. Effect of medium on rate of multiplication, virulence and heat susceptibility of hemolytic streptococcus. Jour. Infect. Diseases 37: 277-283. 1925.—Comparisons were made between a stock strain of a hemolytic streptococcus and a culture of this strain cultured repeatedly in rabbits over a period of several years. The passage strain developed more rapidly in infusion broth. This strain was much the more pathogenic. The ratio of cells of the passage strain to stock strain necessary to kill a rabbit varied as about 1 to 553,000. The thermal death point of the passage culture was lower than that of the stock culture. No appreciable differences were observed as regards tolerance to chemical germicides.—*R. L. Starkey.*

5526. BRANHAM, SARA E. Toxic products of *Bacterium enteritidis* and of related microorganisms. Jour. Infect. Diseases 37: 291-308. Fig. 1. 1925.—Filtrates of cultures of *Bacterium enteritidis* and other members of the colon-typhoid group as well as autolysates from these organisms were toxic to rabbits and mice but not guinea pigs when injected intravenously. These solutions appeared harmless when introduced subcutaneously, intraperitoneally or by feeding. The toxic material appeared only in ageing cultures as the cells began to disintegrate. It developed in media lacking protein, peptone, or amino acids. The serum of rabbits immunized to the poison protected other rabbits. The toxin appeared to be thermostabile, developed within the bacterial cell and set free only upon the disintegration of the cell. It is probably not a true soluble toxin.—*R. L. Starkey.*

5527. CALDWELL, MARY E. Viability of *Mycobacterium tuberculosis* in a semi-arid environment. Jour. Infect. Diseases 37: 465-472. 1925.—*Mycobacterium tuberculosis* in sputum when introduced into dust retained its viability in the presence of sunlight for at least 72 hours.—R. L. Starkey.

5528. ECKER, E. E., AND EMERSON MEGRAIL. Production of toxic substances in young cultures of single cell strains of *B. paratyphosus* B. Jour. Infect. Diseases 37: 546-548. 1925.—Filtrates of cultures of *B. paratyphosus* B grown from single cells proved to be as toxic as filtrates from the parent cultures.—R. L. Starkey.

5529 ECKER, E. E., AND M. L. RICHARDSON. Nature of the toxic substances produced by *B. suispestifer*. Jour. Infect. Diseases 37: 538-545. 1925.—Filtrates from solution cultures and solutions from suspended agar cultures of *B. suispestifer* were toxic for rabbits. This substance proved to be antigenic but the serums afforded protection when given in relatively large doses.—R. L. Starkey.

5530. FALK, I. S., AND F. POWDERMAKER. The effect of hydrogen ion concentration on certain antigenic properties of *Clostridium botulinum*. Jour. Infect. Diseases 37: 514-519. 1925.—Agglutinins were developed against cultures of *Clostridium botulinum*. The results indicate that the difference between types A and B are quantitative rather than qualitative. The addition of acid or alkali to the antigen suspensions markedly affected the extent of agglutinin formation.—R. L. Starkey.

5531. FALK, I. S., H. A. GUSSIN, AND M. A. JACOBSON. Studies on respiratory diseases. XXI. Electrophoretic potential and virulence of pneumococci (types 1, 2, 3 and 4). Jour. Infect. Diseases 37: 481-494. Fig. 1. 1925.—Correlations between virulence of 76 strains of pneumococci for white mice and the electrophoretic potentials of these cultures were studied. A modified technique is described which was supposed to eliminate endosmotic streaming in solutions in which the measurements of cataphoresis were performed. Pneumococcus type 3 generally gave highest potential followed by types 1, 2 and 4. Some correlation was noted between the order of electrophoretic potentials of these types and their virulence for white mice. Types having high potentials appeared to be more virulent. The correlations appeared more nearly qualitative than quantitative.—R. L. Starkey.

5532. FALK, I. S., M. A. JACOBSON, AND H. A. GUSSIN. Studies on respiratory diseases. XXII. Some relations between fatality in lobar pneumonia and electrophoretic potentials on pneumococci. Jour. Infect. Diseases 37: 495-498. 1925.—From a survey of the literature and a consideration of the fatality of cases of pneumonia from which 76 strains of pneumococci were isolated, it is believed that the order of decreasing virulence of the 4 types for man and white mice is also the order of their decreasing electrophoretic potentials. Pneumococci of types 2, 3 and 4 from non-fatal cases of pneumonia gave lower potentials than strains from fatal cases. Strains of type 1 showed the reverse tendencies.—R. L. Starkey.

5533. FALK, I. S., M. A. JACOBSON, AND H. A. GUSSIN. Studies on respiratory diseases. XXIII. Electrophoretic potential and virulence of variants of type 1 pneumococci. Jour. Infect. Diseases 37: 499-506. 1925.—Varieties of type 1 pneumococci differed in electrophoretic potentials. The potentials might be changed in degree as well as order by washing in water or salt solution.—R. L. Starkey.

5534. FALK, I. S., AND M. A. JACOBSON. Studies on respiratory diseases. XXIV. Electrophoretic potential, virulence and serum agglutination with single cell cultures of variants of type 1 pneumococci. Jour. Infect. Diseases 37: 507-513. 1925.—Studies with varieties of type 1 pneumococcus indicate that cultures from single cells were the same as the parent cultures with respect to virulence for white mice, electrophoretic potential and serum agglutination.—R. L. Starkey.

5535. KENDALL, ARTHUR ISAAC. Nonglucose-fermenting bacteria and insulin. Studies in bacterial metabolism. LXXIII. Jour. Infect. Diseases 37: 329-332. 1925.—Four bacteria known not to produce acid from glucose were investigated with regard to any effect the presence of insulin might exert on their decomposition of glucose. With these organisms, *Bacillus alcaligenes*, a spiral organism, a diplococcus, and *Micrococcus catarrhalis*, the presence of insulin in the media failed to incite any acid production from glucose.—R. L. Starkey.

5536. KENDALL, ARTHUR ISAAC, AND MITZUTERU ISHIKAWA. Effect of insulin on cultures

of *B. bulgaricus* and *B. acidophilus*. Studies in bacterial metabolism. LXXIV. Jour. Infect. Diseases 37: 333-336. 1925.—The presence of insulin in milk-broth-glucose media failed to increase production of acid by cultures of either *Bacillus acidophilus* or *Bacillus bulgaricus*.—*R. L. Starkey*.

5537. KENDALL, ARTHUR ISAAC, AND MITZUTERU ISHIKAWA. Effect of insulin on bacterial metabolism. Studies in bacterial metabolism. LXXV. Jour. Infect. Diseases 37: 337-339. 1925.—From the examination of cultures of many different bacteria it was found that additions of insulin failed in all instances to increase production of acid from glucose.—*R. L. Starkey*.

5538. TAYLOR, W. L., AND CHARLES PHILLIPS. Some investigations into the bacteriology of common colds and an autogenous vaccine therapy for six months at Wake Forest College. (From Proc. North Carolina Acad. Sci.) Jour. Elisha Mitchell Sci. Soc. 38: 14-15. 1922.

5539. THOMPSON, LUTHER, AND F. W. TANNER. Toxin production by *Clostridium botulinum* in canned foods. Jour. Infect. Diseases 37: 344-352. 1925.—Studies were conducted on toxin production by *Clostridium botulinum* in 23 kinds of canned foods including fruits, vegetables and meat. Beans, hominy, peas, sweet potatoes, shrimp and salmon became toxic regularly. Toxin production was irregular in asparagus, beets, pumpkin, and spinach. Very acid fruits and vegetable products did not become toxic. One of the most important factors determining toxin production appeared to be reaction and the variability in toxin production in cans of the same products appeared to be correlated with variations in the reaction which might have been determined by the quality of the material canned. Partial spoilage of the vegetables tended to lower the acidity sufficiently to favor growth and toxin production by the organism.—*R. L. Starkey*.

5540. TILLEY, F. W., AND J. M. SCHAFER. Germicidal efficiency of coconut oil and linseed oil soaps and of their mixtures with cresol. Jour. Infect. Diseases 37: 359-367. 1925.—Soaps of coconut oil were shown to be more germicidal against *B. typhosus*, *B. pyocyaneus* and *Staphylococcus aureus* than soaps of linseed oil. The germicidal effects were increased by the presence of 2% NaCl or alkali in excess of that required to saponify the fatty acids. With cresol soaps the proportional amounts of cresol in the soaps greatly affected the resultant germicidal effects.—*R. L. Starkey*.

5541. WHERRY, W. B., AND J. A. BOWEN. Detoxication of bacterial vaccines by formaldehyde. Jour. Infect. Diseases 37: 520-522. 1925.—Treatment of *B. dysenteriae*—Shiga and *B. typhosus* with formaldehyde appears to detoxify the cultures.—*R. L. Starkey*.

TAXONOMY OF VASCULAR PLANTS

J. M. GREENMAN, *Editor*

E. B. PAYSON, *Assistant Editor*

(See also in this issue Entries 4452, 4455, 4661, 4668, 4670, 4686, 4693, 4743, 4758, 4768, 4772, 4775, 4799, 4816, 4857, 5028, 5284, 5398, 5423, 5489)

GENERAL

5542. ANONYMOUS. Botanical research on the Tibetan border. China Jour. Sci. and Arts 32: 85. 1925.—Report is made of the progress of an expedition in Tibet carried out by F. Kingdon Ward and Lord Cawdor. In addition to collecting specimens they are to gather seed of various interesting plants.—*Albert N. Steward*.

5543. BIDWELL, G. L., AND E. O. WOOTON. Saltbushes and their allies in the United States. U. S. Dept. Agric. Dept. Bull. 1345. 1-39. Pl. 1-10, 1 fig. 1925.—Samples of saltbushes and related species were collected and analyzed. This bulletin gives these analyses together with a discussion of botanical characteristics of different species and the value of the plants as food for animals on the ranges. There are, in addition, averages of various analyses of these same plants taken from the literature.—*G. L. Bidwell*.

5544. COKER, W. C. A visit to Lapland and to some old herbaria. Jour. Elisha Mitchell Sci. Soc. 38: 24-25. 1922.

5545. SPRAGUE, T. A. Humboldt and Bonpland's Mexican itinerary. Kew Bull. 1924: 20-27. 1 map. 1924.—Humboldt and Bonpland collected 972 species in Mexico, most of which were described as new. Their collections laid the foundation for a knowledge of Mexican flora. A study is here made of their itinerary followed by an index of the localities mentioned by them.—T. J. Fitzpatrick.

5546. TAYLOR, NORMAN. Grier's Notes on the flora of Long Island. Rhodora 27: 213-215. 1925 [1926].—A criticism is given of a series of papers by N. M. Grier on the flora of Long Island, which are considered misleading and full of errors, several of which are cited.—S. F. Blake.

PTERIDOPHYTES

5547. ANONYMOUS. Recent fern literature. Amer. Fern Jour. 15: 62-65, 98-100. 1925.

5548. CORNE, F. E. Ferns—facts and fancies about them—V. Amer. Fern Jour. 15: 57-62. 1925.—The author describes the life-history of ferns in non-technical terms and indicates means of identification.—E. R. Walker.

5549. FARWELL, O. A. Botrychium dissectum. Amer. Fern Jour. 13: 42-45. 1923.—The writer considers *Botrychium dissectum* the type. *B. obliquum* should be *B. dissectum* var. *obliquum*.—E. R. Walker.

5550. KITTREDGE, E. M. Notes on cinnamon ferns. Amer. Fern Jour. 15: 93-98. Pl. 7. 1925.—The author finds many variations in the leaf characters.—E. R. Walker.

5551. LEONARD, E. C. Fern collecting in Haiti—I. Amer. Fern Jour. 15: 69-80. Pl. 5-6. 1925.—Description is given of a trip to Haiti and its fern flora.—E. R. Walker.

5552. MACKENZIE, KENNETH K. Proper use of the name Filix. Amer. Fern Jour. 15: 40-46. 1925.

5553. MAXON, WILLIAM R. New tropical American ferns—II. Amer. Fern Jour. 15: 54-57. 1925.—Two new species of tree ferns are reported and described: *Alsophila Gleasoni* from British Guiana, and *A. borinquena* from Porto Rico.—E. R. Walker.

5554. MOUSLEY, HENRY. Unusual fern finds. Amer. Fern Jour. 15: 87-90. 1 fig. 1925.—*Botrychium onondagense* was found at Hatley, Stanstead County, Quebec. Dichotomous branching occurred in this species. *Botrychium virginianum* was found with 4 fruiting panicles. Exceptionally small specimens of *Botrychium virginianum* and *Ophioglossum vulgatum* are reported, as well as exceptionally large specimens of *Botrychium virginianum*. Other species found are *Polypodium virginianum*, *P. virginianum* f. *cambricoides*, and *Adiantum pedatum* var. *aleuticum*.—E. R. Walker.

5555. SCHAFFNER, JOHN H. How to distinguish the North American species of *Equisetum*. Amer. Fern Jour. 13: 33-40. 1923.—Vegetative characters separating North American species of *Equisetum* are discussed.—E. R. Walker.

5556. WHERRY, EDGAR T. The Appalachian *Aspleniums*. Amer. Fern Jour. 15: 47-54. Pl. 4. 1925.—Four Appalachian *Aspleniums* had been previously known; 2 new ones, *A. Trudelli* from Pennsylvania and *A. Stotteri* from West Virginia, are described.—E. R. Walker.

SPERMATOPHYTES

5557. ANONYMOUS. Additions to the Index Kewensis: III. Kew Bull. 1924: 280-283. 1924.—The Gramineae obtained by the French scientific mission to Mexico and Central America in 1865-1866 were published by Fournier in 1886, though printed and some sheets distributed as early as June, 1880. A list is given of the new genera and new species which will be inserted in Index Kewensis, supplement VI.—T. J. Fitzpatrick.

5558. ANONYMOUS. Decades Kewenses, decas cviii. Kew Bull. 1923: 371-376. 1923.—New species are proposed, with ecological data. The species by J. HUTCHINSON is *Orophea salacifolia*, Betapuo Valley, Andaman Islands. Those by T. A. SPRAGUE and L. A. M. RILEY are: *Calliandra confusa*, Cobán, Alta Vera Paz, Guatemala; *C. similis*, San José, Costa Rica; and *Piriqueta xylocarpa*, British Honduras. Those by J. S. GAMBLE are: *Strobilanthes circarensis*, Vizagapatam District in North Circars, southern India; *S. Lawsoni*, Nilgiris,

Sispara Ghât, southern India; *S. urceolaris*, Pulney Hills, southern India; *Andrographis Lawsoni*, South Canara Ghâts, southern India; and *Lepidagathis Barberi*, Mysore and Carnatic, southern India. J. F. WABY delimits *Chrysalidocarpus glaucescens*, from Trinidad, West Indies.—T. J. Fitzpatrick.

5559. ANONYMOUS. *Decades Kewenses*. Kew Bull. 1924: 261–266. 1924.—The following new species are described, with ecological data. Those by H. N. RIDLEY are: *Garcinia Holttumi*, Gunong Belumut, Johor, Malay Peninsula; *Grewia latistipulata*, Klang, Selangor, Malay Peninsula, also var. *lanceolata*, Pedang, Sungei Bulu, Sumatra; *Microtropis peduncularis*, Ulu Bubong, Perak, Malay Peninsula; and *Selaginella rivalis*, Ulu Gombak, Selangor, Malay Peninsula. Those by J. S. GAMBLE are: *Plectranthus Bourneae*, Madura District, Pulney Hills, South India; *P. Bishopianus*, Pulney Hills, Madura District, southern India; *Anisochilus argenteus*, Kodaikanal Ghât, Pulney Hills, southern India; and *Teucrium plectranthoides*, Sengalteri, Tinnevely District, southern India. W. B. TURRILL describes *Verbascum luteo-viride*, near Shtrkleva, district Rouscuck, northeastern Bulgaria. *Swertia pedicellata* is described by BANERJI, from Senchal, Darjeeling District, Bengal, northeastern India.—T. J. Fitzpatrick.

5560. ANONYMOUS. *Diagnoses africanæ: lxxviii*. Kew Bull. 1924: 255–261. 7 fig. 1924.—The following new species are delimited by J. HUTCHINSON: *Tricalysia lineariloba*, Bitye, near the river Ja, Cameroons, tropical Africa; *Arctotis Roodae*, near Vanrhynsdorp, South Africa; and *Drypetes Battiscombei*, Kenya Colony, tropical Africa. Those by J. HUTCHINSON and W. ROBYNS are: *Pyrenacantha ugandensis*, edge of forest, Entebbe District, Uganda, tropical Africa; and *Venidium intermedium*, South Africa. Other new species are: *Mniothamnea passerinoides* by C. H. WRIGHT, South Africa, probably near Somerset West; *Oldenlandia setulosa* by F. C. WILSON, Waterberg District, Transvaal, South Africa; *Asclepias nana* by I. V. VERDOORN, on granite plains, Pyramid estate near Potgieter's Rust, Waterberg Div., South Africa; *Phyllanthus cedrelifolia*, also by Verdoorn, Egosa Forest Reserve, Lusakisiki District, South Africa; and *Brachystelma viridiflorum* by W. B. TURRILL, Pretoria, South Africa.—T. J. Fitzpatrick.

5561. AFZELIUS, KARL. *Einige neue Senecionen vom Kenia und vom Mt. Aberdare*. [Some new Senecionae from Kenia and Mt. Aberdare.] Svensk. Bot. Tidskr. 19: 419–422. 1925.—*Senecio Roberti-Friesii* and var. *subcanescens*, *S. Sattimae*, and *S. Theodoris* are described as new. All 4 are closely related and apparently come near to *S. Schweinfurthii* O. Hoffm.—O. Heilborn.

5562. ANDRES, H. *Eine neue Pirola (P. alba) aus Kewi-Tschou*. [A new *Pirola (P. alba)* from Kwei-Tschou.] Repert. Spec. Nov. Regni Veg. 19: 80. 1923.—This new species, *Pirola alba*, is described in detail.—Robert Woodson.

5563. ANDRES, H. *Studien zur speziellen Systematik der Pirolaceae*. [Studies on the special Taxonomy of the Pirolaceae.] Repert. Spec. Nov. Regni Veg. 19: 209–224. 1923.—The genus *Ramischia* Opiz receives careful treatment, and the following new species and combinations are included: *Ramischia truncata*, southeastern Canada; *R. secunda* Garcke var. *elatio* (*R. elatio* (Lange) Rydb.); *R. secunda* var. *pumila* (*Pirola secunda* var. *pumila* Paine), northern North America; *R. secunda* var. *dispersiflora* (*Pirola secunda* L. var. *dispersiflora* Norm.); *R. obtusata* (Turcz.) Freyn var. *borealis* (*Pirola secunda* L. var. *borealis* J. Lange), Labrador.—Robert Woodson.

5564. ASHE, W. W. *Notes on shrubs of the southeastern States*. Jour. Elisha Mitchell Sci. Soc. 39: 110–111. 1923.—Two new species of *Robinia* are described, *R. unakae* (North Carolina and Tennessee) and *R. pedunculata* (Tennessee). *Azalea speciosa* is reported for the first time from North Carolina (Macon County).—W. C. Coker.

5565. ASHE, W. W. *Notes on woody plants*. Jour. Elisha Mitchell Sci. Soc. 40: 43–48. 1924.—The following new species and varieties are described: *Quercus leiodermis*, *Ilex glabra* var. *austriana*, *I. arenicola*, *I. Beadlei* var. *laevis*, *Castanea margareta* var. *angustifolia*, *C. margareta* var. *arcuata*, *Hicoria mollissima*, *Viburnum rufidulum* var. *floridanum*, *V. rufidulum* var. *margarettae*, and *V. Bushii*. Several new combinations are also proposed.—W. C. Coker.

5566. ASHE, W. W. *The eastern shrubby species of Robinia*. Jour. Elisha Mitchell

Sci. Soc. 37: 175-177. 1922.—Nine species and 1 variety are keyed; 1 new species, *R. margar-etta*, is proposed; 1 variety raised to specific rank (*R. grandiflora* = *R. hispida* var. *rosea* Pursh); and 1 species reduced to varietal rank (*R. viscosa* var. *Hardwegii* = *R. Hardwegii* Koeh.).—*W. C. Coker.*

5567. BECCARI, O. *Palmae novae antillanae*. II. [New antillean palms. II.] Repert. Spec. Nov. Regni Veg. 16: 436-437. 1920.—The following new species are described in detail: *Geonoma Dussiana*, Guadeloupe; *Euterpe Broadwayana*, Tobago; *Bactris Sworderiana*, Tobago.—*Robert Woodson.*

5568. BECKER, WILH. *Euphrasia novae*. [New Euphrasia.] Repert. Spec. Nov. Regni Veg. 17: 126-127. 1921.—The following new species, hybrid, and variety are described: *Euphrasia coreana*, Korea; *E. amurensis* × *hirtella* = *E. ramosa* (*E. hirtella* var. *ramosa* Freyn), Amur region, and *E. hirtella* var. *Karoiana*, Amur region.—*J. M. Greenman.*

5569. BECKER, WILH. *Viola Forrestiana* spec. nov. Repert. Spec. Nov. Regni Veg. 19: 234. 1923.—This new species from southeastern Thibet is described.—*Robert Woodson.*

5570. BECKER, WILH. *Viola Mexicanae et Centrali-Americanae*. I. Repert. Spec. Nov. Regni Veg. 19: 392-400. 1924.—An extensive compilation of the violets of Mexico and Central America is begun, with tables showing geographical distribution of species, altitudes, etc.—*Robert Woodson.*

5571. BECKER, WILH. *Viola Nelsonii* spec. nov. Repert. Spec. Nov. Regni Veg. 19: 92. 1923.—The new species, mentioned in the title, is described from Mexico.—*Robert Woodson.*

5572. BECKER, WILH. *Violae novae praecipue Asiaticae*. [New violets, mostly of Asia.] Repert. Spec. Nov. Regni Veg. 17: 72-76. 1921.—The following new species, subspecies, and varieties are described: *Viola himalayensis*, *V. epipsila* Led. subsp. *palustroides*, *V. hirtipedoides*, *V. microcentra*, *V. perinensis*, *V. albanica* Halácsy var. *lutea*, *V. alchariensis* G. Beck. var. *typica*, *V. allchariensis* var. *Herzogii*, *V. allchariensis* var. *prilepensis*, *V. allchariensis* subsp. *gostivarensis*, and *V. atro-violacea*.—*J. M. Greenman.*

5573. BITTER, GEORG. *Solana nova vel minus cognita XVII, XVIII, XIX*. [New or little known Solanums XVII, XVIII, XIX.] Repert. Spec. Nov. Regni Veg. 16: 10-15, 79-103. 1919; XIX. *IBID.* 16: 389-409. 1920.—The following new species are described: *Solanum trachytrichum*, Brazil, Argentina; *S. chachapoyasense*, Peru; *S. oxycoccoides*, Peru; *S. trachycyphum*, Colombia; *S. selachophyllum*, Peru; *S. Schlimii*, Colombia; *S. clematideum*, Ecuador; *S. alati-rameum*, Brazil; *S. marmellosanum*, Brazil; *S. hypostichopogon*, Peru; *S. squamuliferum*, Colombia; *S. Jamesoni*, Ecuador; *S. fulvivilosum*, Ecuador; *S. hypaleurotrichum*, Colombia; *S. hypiodes*, Colombia; *S. laurifrons*, Colombia; *S. stellatiglandulosum*, Colombia; *S. fulvidum*, Brazil; *S. secundum*, Venezuela; *S. asperrimum* Bitter & Moritz, Venezuela; *S. pyrrhocladum*, Brazil; *S. dolichosepalum*, Colombia; *S. asteropilodes*, Colombia; *S. stellativelutinum*, Bolivia; *S. chamydogynum*, Venezuela, and its var. *lateellipticum*, Colombia; *S. xanthophaeum*, Peru; *S. cruciferum*, Peru; *S. maranguapense*, Brazil; *S. ecuadorensis*, and vars. *nervisequum*, *modice-pilosum*, *glabriusculum*, and *linizae*, Ecuador; and *S. chiliadenium*, Peru.—*Robert Woodson.*

5574. BITTER, GEORG. *Zur Gliederung der Gattung Saracha und zur Kenntnis einiger ihrer bemerkenswerten Arten*. III. [Classification of the genus *Saracha* and the knowledge of some of its remarkable species. III.] Repert. Spec. Nov. Regni Veg. 19: 265-270. 1924.—The following new species, subspecies, and combination are described: *Saracha nitida*, Venezuela; *S. Weberbaueri* Damm. subsp. *pallascana*, Peru; *S. repandidentata* (*S. procumbens* Ruiz & Pavon var. *repando-dentata* Dun.), Brazil.—*Robert Woodson.*

5575. BORNMÜLLER, J. *Zur Gattung Sideritis (Leucophaë) der Flora Makaronesiens*. [The genus *Sideritis* (Leucophaë) of the Macaronesian flora.] Repert. Spec. Nov. Regni Veg. 19: 271-281. 1924.—The following new species are fully described: *Sideritis Kuegleriana*, Teneriffa; *S. Bolleana*, Palma; and *S. Engleriana* n. hyb. in the Berlin Bot. Gard.—*Robert Woodson.*

5576. BOULENGER, G.-A. *Remarques sur l'importance attachée au mode d'insertion des carpelles pour la classification des espèces du genre Rosa*. [Importance of mode of insertion of carpels for classification of species of *Rosa*.] Compt. Rend. Acad. Sci. Paris 181: 1114-1116. 1925.—A discussion of the basis for distinction of certain sections of roses, especially

the Carolinae and the Cinnamoneae, as made by Crépin and by Rydberg. The author notes certain exceptions to the insertion of achenes in the bottom of the hypanthium in the former section, and to the persistence of sepals in the latter.—*C. H. Farr.*

5577. BRAID, K. W., AND H. N. RIDLEY. *New orchids: decas L.* Kew Bull. 1924: 199-206. 1924.—The following new species are delimited by Braid: *Pleurothallis cardiocrepis*, *P. carnosae*, *P. fuscata*, all 3 from cultivated plants at Kew, habitats unknown; *P. nervosa*, Cachi district, Costa Rica; *Ione purpurata*, Indo-China, Siam; *Eria Brownei*, Chin Hills, Burma; *Spiranthes Pamii*, with the new varieties *bruneolus*, *spiralis*, and *brevipetiolatus*, Buenos Aires, Argentina; and *Stenorrhynchus bonariensis* n. comb., from *Spiranthes bonariensis* Lindl., Buenos Aires, Argentina. The following are proposed by Ridley: *Bulbophyllum caesariatum*, Indo-China, Lower Siam; and *Eria citrina*, Borneo.—*T. J. Fitzpatrick.*

5578. BRAND, A. *Decas specierum novarum tertia.* Repert. Spec. Nov. Regni Veg. 19: 70-73. 1923.—The following new species are described: *Lindelofia lahulensis*, southwestern Himalaya; *Allocarya Piperi*, *A. versicolor*, *A. microcalyx*, *A. Hillebrandii*, *A. nigra*, and *A. filicaulis*, California; *Oreocarya Sheldonii*, Oregon; and *O. Macbridii*, Nevada.—*Robert Woodson.*

5579. BRITTON, NATHANIEL LORD. *A Trinidad tree-gentian.* Bull. Dept. Agric. Trinidad and Tobago. 194: 230. 1922.—A description of *Chelonanthus arboreus* n. sp., is given.—*Florence A. McCormick.*

5580. BRITTON, NATHANIEL LORD. *The cacti of Trinidad.* Bull. Dept. Agric. Trinidad and Tobago 192: 81-87. 1921.—Descriptions of 13 native and 2 introduced species of cacti are given.—*Florence A. McCormick.*

5581. CAMUS, AIMEE. *Hitchcockella, genre nouveau de Bambusées malgaches.* [Hitchcockella, a new genus of Madagascan bamboo.] Compt. Rend. Acad. Sci. Paris 181: 253-255. 1925.—In a study of the bamboos in the herbarium of the Museum d'Histoire naturelle of Paris, there was found a new genus of bamboo collected in Madagascar by Baron. It is named after A. S. Hitchcock, the American agrostologist. A description is given of the single new species, *Hitchcockella Baronii*. The differences between this new genus and the related genera, *Perrierbambus*, *Nastus*, and *Chusquea*, are pointed out. This increases the number of genera of Madagascan bamboos to 9, and the species to 22, all of which are endemic.—*C. H. Farr.*

5582. CAMUS, AIMEE. *Lecomtella, genre nouveau de Graminées malgaches.* [Lecomtella, a new genus of Madagascan grasses.] Compt. Rend. Acad. Sci. Paris 181: 567-568. 1925.—A very distinct genus collected by Perrier de la Bathie in Madagascar is given the name *Lecomtella*. It has some resemblances to *Ichnanthus*, and others to *Olyra*. The species *Lecomtella madagascariensis* is described. It was collected at an altitude of 1600-2400 m. Here it forms a dense growth after forest fires, and in turn burns, giving place to prairie species.—*C. H. Farr.*

5583. CARPENTER, ANNA E. *Further cases of inconstancy in color forms.* Rhodora 27: 199-200. 1925.—A colony of *Impatiens biflora* with nearly or quite spotless flowers in 1925 produced flowers so thickly dotted with pink as to almost hide the ground color. The corollas of a plant of *Lobelia cardinalis*, at first white with short pink tips to the lobes, became deeper colored in successive years, until in the 4th year the corollas were cardinal red with pink centers.—*S. F. Blake.*

5584. CHOUX, P. *Les Cupaniées malgaches.* [The Madagascan Cupanieae.] Compt. Rend. Acad. Sci. Paris 181: 71-72. 1925.—The Cupanieae is the tribe of Sapindaceae best represented in Madagascar, and is richer in species than formerly supposed. This material was collected by Perrier de la Bathie, and 4 new species, with a new genus, are described: *Molinaea rubicunda*; *Tina bongolavensis*; *T. multifoveolata*, and *Bemarivea dissitiflora*. This new genus resembles *Tina* and *Tinopsis* in having bilocular fruit, but has 2 appendages on the inner surface of the petals. The number of stamens varies from 5 to 7, instead of being 8 as in *Tina*. Of this tribe, 19 species are now known in Madagascar.—*C. H. Farr.*

5585. CRAIB, W. G. *Contributions to the flora of Siam.* Kew Bull. 1924: 81-98. 1924.—The following new species are delimited, including ecological data: *Monocarpia siamensis*, Mê Lamung, Kampêng Pêt; *Polyalthia rufa*, *Saccopetalum lineatum*, and *Alsodeia immersa*, Mê Wong Nakawn Sawawn; *Corydalis siamensis*, Doi Chiengdao; *Garcinia McKeaniana*, Doi Sutep;

G. plena, Nan, Ban Tiu; *G. propinqua*, Doi Chiengdao; *Calophyllum Smilesianum*, Kao Keo Kang, Dan Sui, also var. *lutea*, Doi Pahom Pok; *C. Williamsianum*, Nan, Doi Tiu; *Gordonia Dalglieshiana*, Doi Sute; *Pyrenaria Garrettiana*, Doi Pahom Pok, Muang Fáng; *Adiandra oblonga*, Kao Luang, Sukotai; *Pterospermum grande*, Doi Kiu Lom, Muang Pai; *P. venustum*, Nakawn Tai; *Reevesia siamensis*, Dan Sai, Kao Keo Kang; *Helicteres vinosa*, Nakawn Tai; *Dalbergia Marcaniana*, associated with *Derris uliginosa*, Paknam, Bangkok; *Bauhinia bracteata* Graham var. *Marcanii*, Hua Hin; *B. Helferii*, Mê Chêm, Chiengmai; *B. Kerrii* Gagnep. var. *grandiflora*, near Chiengrai, Chieng Kien; *B. Prainiana*, Muang Tāk, Mê Mue; *B. Sanit-wongsei*, Bangkok; *B. strychnifolia*, Kampêng Pêt; *B. Winitii*, Kanburi; *Gomphostemma strobilinum* Wall. var. *variegatum*, Doi Sute; *Actephila Collinsae* Hunter, Petchaburi; *Daphniphyllum longipes*, Doi Sute; *Trigonostemon Kerrii*, Nakawn Tai; *Blachia jatrophifolia* Pax & Hoffm. var. *siamensis*, Sriracha; and *Seria khasiana* C. B. Clarke var. *glaberrima* Turrill, Doi Sute.—*T. J. Fitzpatrick.*

5586. DAVY, J. B. New or noteworthy South African plants, VI. Kew Bull. 1924: 223-235. 1924.—The following new species are described: *Cleome Breyeri*, *C. Nationae*, *Maerua Legatii*, *Oxalis Galpinii*, *Garcinia transvaalensis*, *Drosera Collinsiae* N. E. Brown, *Aristolochia Bainesii*, *Dioscorea Junodii*, *D. brevipes*, all from Transvaal. The new varieties are: *Thalictrum minus* L. var. *caffrum*, *Nymphaea calliantha* Conard var. *Nelsonii*, *Sagina maxima* A. Gray var. *parviflora*, and *Zantedeschia melanoleuca* Engl. var. *concolor*. New combinations are: *Cleome maculata* (Polanisia maculata Sond.), *C. Conrathii* (*P. triphylla* Conrath, non *C. triphylla* L.), *Hybanthus Thornercroftii* (*Ionidium Thornercroftii* N. E. Br.), *Zantedeschia oculata* (*Calla oculata* Lindl.), *Z. Elliottiana* (*C. Elliottiana* Knight), and *Z. Sprengeri* (*Richardia Sprengeri* Comes). *Erythroxylin Brownianum* is given as a new name for *E. mongynum* Harv., non Roxb.—*T. J. Fitzpatrick.*

5587. DEMIEVILLE, S. La formation d'un herbier. [Making an herbarium.] Jour. Suisse Pharm. 59: 136-141, 151-156. 1921.—A resume is given of an article by Zornig, that had appeared recently in this journal. The subject is treated under the following heads: General rules, Equipment, Determination of the plants, Drying the plants, Other ways of preparing plants, Selection and treatment of the plants when placed in the herbarium, Classifying the plants, Insects injurious to herbariums.—*Charles C. Platt.*

5588. DIELS, L. *Atriplex chamaecladum* spec. nov. Repert. Spec. Nov. Regni Veg. 16: 194. 1919.—This new species, reported from Australia, is fully described.—*Robert Woodson.*

5589. DIELS, L. *Leptofeddea* Diels, eine neue Gattung der Solanaceen aus Peru. [Leptofeddea Diels, a new genus of Solanaceae from Peru.] Repert. Spec. Nov. Regni Veg. 16: 193. 1919.—*Leptofeddea* is proposed as a new genus and *L. lomana* is described in detail.—*Robert Woodson.*

5590. DINTER, K. Beiträge zur Flora von Südwestafrika. I, II. [Contributions to the flora of Southwest Africa. I, II.] Repert. Spec. Nov. Regni Veg. 19: 122-160, 177-186. 1923.—The following new species are described: *Mesembrianthemum Nissenii*; *M. Pomonae*; *M. bellum*; *M. confusum*; *M. scintillans*; *M. Azthelmianum*; *M. clausum*; *M. hospitale*; *M. Weigandianum*; *M. Klinghardtianum*; *M. melanospermum*; *M. Simpsonii*; *M. kovisimontanum*; *M. montis draconis*; *M. Delaetianum*; *M. Derenbergianum*; *M. suavissimum*; *Othonna pusilla*; *Portulaca collina*; *Othonna rhopalophylla*; *O. protecta*; *Senecio avasimontanus*; *Othonna papillosa*; *O. aconioides*; *O. litoralis*, *Crassula mesembrianthemopsis*; *C. montis draconis*; *Cotyledon Schafferiana*; *Crassula tabularis*; *C. montis Moltkei*; *Kalanchoe pruinosa*; *Cotyledon montium Klinghardtii*; *Crassula avasimontana*; *Mesembrianthemum velutinum*; *Anacampseros Dielsiana*; *Mesembrianthemum dolomiticum*; *M. quarziticum*; *M. rupis arcuatae*, *M. Otzenianum*, *M. Gigas*; *M. Hörleinianum*; *Stapelia pachyrrhiza*; *Trichocaulon perlatum*; *T. Delaetianum*; *Sarcophagophilus* n. gen. of the Asclepiadaceae, *S. Winklerianus*; *Anthericum pachyrrhizum*; *Albuca paradoxa*; *Aloe Juttae*; *Stapelia Ruschiana*; *Ceropegia tuberculata*; *Strumaria phonolithica*; *Aloe pachygaster*; *Mesembrianthemum Ruschianum*; *M. Beetzii*; *M. pauper*; *Pelargonium paradoxum*; *Haemanthus splendens*; *Pelargonium graniticum*; *P. amabile*, *Eriospermum pilosopetiolatum*; *Dipcadi stenophylla*; *D. Ernesti-Ruschii*; *Albuca odoratissima*; *Dipcadi avasimontana*; *D. ausense*; and *Haemanthus avasimontanus*.—*Robert Woodson.*

5591. DINTER, K. Index, der aus Deutsch-Südwestafrika bis zum Jahre 1917 bekannt gewordenen Pflanzen. IV. V. VI. [Index of known plants from German Southwest Africa

to the year 1917. IV. V. VI.] Repert. Spec. Nov. Regni Veg. 16: 167-174, 239-244. 1919; *IBID.* 361-368. 1920.—An extensive list of plants is compiled, including the following new species: *Convolvulus tumbensis* Dtr.; *Corallocarpus glaucicaulis* Gilg & Ditr.; *C. scaber* Dtr. & Gilg; *Cordylogyne argillicola* Dtr.; *Crassula mesembryanthemopsis* Dtr.; *C. pseudolycopodioides* Dtr. & Schz.; *C. Selago* Dtr.; *Coleus omahekanensis* Dtr.; *Combretum calocarpum* Gilg; *C. detinens* Dtr.; *C. parvifolium* Dtr.; *C. Zastrovii* Dtr.; *Crinum aurea* Dtr.; *C. geminiflora* Dtr.; *C. kuibisensis* Dtr.; *Cryptolepis arenicola* Schltr.; *C. Cogniauxiana* Dtr.; *Cyanotis Gryphaea* Dtr.; *Cynanchum pseudomarginatus* Dtr.; *Denekea Muschleriana* Dtr.—Robert Woodson.

5592. DINTER, K. Index, der aus Deutsch-Südwestafrika bis zum Jahre 1917 bekannt gewordenen Pflanzenarten. VII. [Index to the known species of plants of German Southwest Africa up to the year 1917.] Repert. Spec. Nov. Regni Veg. 17: 185-192. 1921.—This article carries forward the serial numbers from 760 to 868 inclusive. The following new species and varieties are included: *Dicoma flexuosa* Dinter & Muschl., *D. Seitziana*, *Drimiopsis papillosa*, *Elaeodendron croceum* DC. var. *triandrum*, and *Elephantorrhiza Schinziana*.—J. M. Greenman.

5593. DINTER, K. Index, der aus Deutsch-Südwestafrika bis zum Jahre 1917 bekannt gewordenen Pflanzenarten. [Index of German Southwest African Plants known up to 1917.] Repert. Spec. Nov. Regni Veg. 19: 93-96, 187-192, 235-240. 1923; *IBID.* 315-320. 1924.—An extensive list of German Southwest African plants is continued, but no new species are described in detail.—Robert Woodson.

5594. DINTER, K. Plantae novae Schäferianae. Repert. Spec. Nov. Regni. Veg. 16: 335-344. 1920.—An account of conditions in Namaland (German Southeast Africa) is given; and a list compiled of representatives of its flora, including the following new species: *Anthericum diphyllum*, *A. glutinosum*, *Aster Schäferi*, *Ferraria Schäferi*, *Gnidia suavissima*, *Lachenalia Klinghardiana*, *Pelargonium mirabile*, *P. squarrosom*, *Pharnaceum longearistatum*, *Monsonia namaensis*, and *Lotononis Rabenaviana* Dinter & Harms.—Robert Woodson.

5595. DINTER, K. *Stachys karasmontana* spec. nov. aus Deutsch-Südwest-Afrika. [Stachys karasmontana n. sp. from German Southwest Africa.] Repert. Spec. Nov. Regni Veg. 17: 203. 1921.—This new species is based on Schäfer's No. 316 from Namaland.—J. M. Greenman.

5596. DUNN, S. T. Decades Kewenses. Kew Bull. 1924: 383-387. 1924.—The following new species are described: *Draba obscura*, Sonamarg; *Astragalus Isabellae*, and *Cotoneaster humilis*, Sonamarg, all from Kashmir, northwest India; *Pituranthos Stewartii*, Shapur, Hazara and Punjab, northwest India; *Campanula tenuissima*, Jhelum Valley road, Kashmir, northwest India; *Rochelia lissocarpa*, Purana Tilel, Kashmir, northwest India; and *Scutellaria tenerifolia*, Punjab and west Kashmir, northwest India. The 2 following species are described as new by J. S. Gamble: *Apama Barberi*, Tinnevely district, at Kannikatti, southern India; and *Piper Barberi* from the same locality. R. R. Stewart ex S. T. Dunn describes *Pimpinella kashmirica*, Sonamarg, Kashmir, northwest India.—T. J. Fitzpatrick.

5597. FEDDE, FRIEDRICH. Additamenta ad Dicertriae cognitionem. I. Repert. Spec. Nov. Regni Veg. 17: 193-200. 1921.—The following are described as new: *Dicentra torulosa* Hook. f. & Thoms. var. *yunnanensis*, *D. Schneideri*, and *D. lichiangensis*.—J. M. Greenman.

5598. FEDDE, FRIEDRICH. Additamenta ad Dicertriae cognitionem. II. Repert. Spec. Nov. Regni Veg. 19: 227-228. 1923.—*Dicentra Wolfdietheri* n. sp. is described from China.—Robert Woodson.

5599. FEDDE, FRIEDRICH. Celastraceae novae Chinenses Leveilléanae a Th. Loesener revisae. Repert. Spec. Nov. Regni Veg. 17: 202. 1921.

5600. FEDDE, FRIEDRICH. *Corydalis alpestris* var. *glareosa* (Sommier et Levier). Repert. Spec. Nov. Regni Veg. 16: 195-196. 1919.—*Corydalis Glareosa* Sommier & Levier from the Caucasus is reduced to a variety of *C. alpestris* C. A. Meyer.—Robert Woodson.

5591. FEDDE, FRIEDRICH. *Corydalis conorrhiza* Ledeb. varietatibus aucta. Repert. Spec. Nov. Regni Veg. 16: 196-197. 1919.—*Corydalis conorrhiza* Ledeb. vars. *Sommieri* and *Brotherusiorum* are described from the western Caucasus.—Robert Woodson.

5602. FEDDE, FRIEDRICH. *Corydalis Gortschakowii* var. *stramineo-vaginata* var. nov. Repert. Spec. Nov. Regni Veg. 16: 195. 1919.—This new variety from Turkestan is fully described.—Robert Woodson.

5603. FEDDE, FRIEDRICH. *Corydalis idahoënsis* nom. nov. Repert. Spec. Nov. Regni Veg. 16: 195. 1919.—The name *Corydalis Hendersonii* Fedde in Repert. 12: 278. 1913, is changed to *C. idahoënsis* because of a conflict with *C. Hendersonii* Hemsl. Jour. Linn. Soc. 30: 109. 1894.—Robert Woodson.

5604. FEDDE, FRIEDRICH. *Corydalis Kolpakowskiana* var. *Hennigii* var. nov. aus Turkestan. Repert. Spec. Nov. Regni Veg. 16: 47-48. 1919.—This new variety is fully described.—Robert Woodson.

5605. FEDDE, FRIEDRICH. *Corydalis longipes* et *C. Casimiriana* varietatibus novis auctae. Repert. Spec. Nov. Regni Veg. 16: 312-315. 1920.—The following new varieties from the Himalayan region are described, accompanied by detailed notes: *Corydalis longipes* DC. vars. *Phallutiana*, *Burkillii*, and *Smithii*; *C. Casimiriana* Duthie & Prain var. *Meeboldii*.—Robert Woodson.

5606. FEDDE, FRIEDRICH. *Corydalis pauciflora* var. *Chamissionis* var. nov. aus dem nord-östlichen Amerika. [*Corydalis pauciflora* var. *Chamissionis*, a new variety from northeastern America.] Repert. Spec. Nov. Regni Veg. 16: 48. 1919.—This new variety is described from specimens collected on St. Lorenz Island (Behring Strait) and in the region of Lynn Canal, southeastern Alaska.—Robert Woodson.

5607. FEDDE, FRIEDRICH. *Corydalis Schlechteriana* und *C. pseudoschlechteriana*, spec. nov. aus der Verwandtschaft der *C. curviflora* Max. [*Corydalis Schlechteriana* and *C. pseudoschlechteriana* new species from the affinity of *C. curviflora* Max.] Repert. Spec. Nov. Regni Veg. 16: 197-199. 1919.—These new species from central Asia are described in detail.—Robert Woodson.

5608. FEDDE, FRIEDRICH. *Corydalis sikkimensis* (Prain) Fedde spec. nov., sowie zwei neue Varietäten aus Kaschmir. [*Corydalis sikkimensis* (Prain) Fedde n. sp., as well as two new varieties from Kashmir.] Repert. Spec. Nov. Regni Veg. 17: 201-202. 1921.—The following are described as new: *Corydalis sikkimensis* (*C. Duthiei* Maxim. var. *sikkimensis* Prain), *C. cornuta* Royle var. *Meeboldii*, and *C. tibetica* Hook. f. & Th. var. *bhotkollana*.—J. M. Greenman.

5609. FEDDE, FRIEDRICH. Drei neue Varietäten der *Corydalis incisa*. [Three new varieties of *Corydalis incisa*.] Repert. Spec. Nov. Regni Veg. 17: 197-198. 1921.—The following varieties are described: *Corydalis incisa* var. *pseudomakinoana* from Japan, var. *koreana* from Korea, and var. *tschekiangensis* from eastern China.—J. M. Greenman.

5610. FEDDE, FRIEDRICH. Neue Arten von *Corydalis* aus China. I, II, III. [New species of *Corydalis* from China I, II, III.] Repert. Spec. Nov. Regni Veg. 17: 128-129, 200, 408-411. 1921.—The following new species and varieties are described: *Corydalis brunneovaginata*, *C. Schochii*, *C. Sheareri* S. Moore var. *chanyangensis*, *C. Adrieni* Prain var. *Forrestii*, *C. Weigoldii*, *C. barbisepala* v. Hdl.-Mazz. & Fedde, *C. edulis* var. *cicutariaefolia*, and *C. pseudocristata*.—J. M. Greenman.

5611. FEDDE, FRIEDRICH. Neue Arten von *Corydalis* aus China. IV. [New species of *Corydalis* from China. IV.] Repert. Spec. Nov. Regni Veg. 19: 225-226. 1923.—The following new species and variety are described: *Corydalis pseudoheterocentra* *C. linarioides* var. *fissibracteata*.—Robert Woodson.

5612. FEDDE, FRIEDRICH. Neue Arten von *Corydalis* aus China. V. [New species of *Corydalis* from China. V.] Repert. Spec. Nov. Regni Veg. 19: 281-284. 1924.—The following new species is described from central China: *Corydalis pseudostuminicola*.—Robert Woodson.

5613. FEDDE, FRIEDRICH. Neue Arten von *Corydalis* aus dem Himalaya und den angrenzenden Teilen von Tibet. II, III. [New species of *Corydalis* from the Himalayas and the bordering parts of Tibet. II, III.] Repert. Spec. Nov. Regni Veg. 19: 119-120. 1923; *IBID.*, 284-285. 1924.—The following species and varieties are described as new: *Corydalis Stewartii*; *C. crispa* Prain. var. *Waltoni*; and *C. spathulata* Prain.—Robert Woodson.

5614. FEDDE, FRIEDRICH. Zwei neue Abarten von *Corydalis Sewerzowii* Regel. [Two new varieties of *Corydalis Sewerzowii* Regel.] Repert. Spec. Nov. Regni Veg. 19: 224-225. 1923.—The following new varieties are described from Turkestan: *Corydalis Sewerzowii* Regel var. *simplicifolia* Lipsky; *C. Sewerzowii* Regel var. *parviflora* C. Winkler.—Robert Woodson.

5615. FERNALD, M. L. *Sparganium multipedunculatum* in eastern America. *Rhodora* 27: 190-193. 1925.—*Sparganium multipedunculatum* (Morong) Rydb., hitherto considered a species of western North America, is here recorded from Labrador and Newfoundland to northern New England, and the numerous eastern specimens examined are listed. The diagnostic characters of this species and its close allies *S. chlorocarpum* and *S. angustifolium* are presented in the form of a key.—S. F. Blake.

5616. FERNALD, M. L. The arctic variety of *Alopecurus aequalis*. *Rhodora* 27: 196-199. 1925.—The grass usually known in North America as *Alopecurus aristulatus* Michx. or *A. geniculatus* var. *aristulatus* (Michx.) Torr. is specifically distinct from *A. geniculatus*, and its proper name is *A. aequalis* Sob. (1799). An arctic variety, *A. aequalis* var. *natans* (Wahlenb.) n. comb., occurs in Iceland, Greenland, Newfoundland, and Quebec. The characters of the plants discussed are given and their nomenclatorial histories related.—S. F. Blake.

5617. FERNALD, M. L. The identity of *Eriophorum callitrix*. *Rhodora* 27: 203-210. 1925 (issued 1926).—A common *Eriophorum* of northeastern North America, identified by Fernald in 1905 with *Eriophorum callitrix* Cham., is here shown to be a new species. True *E. callitrix* is a plant of the Asiatic side of Bering Strait and northwestern Newfoundland, a striking distribution shared with various other plants. The characters of *E. callitrix* and related species are discussed, and a key is given to the 5 species of the section *Vaginata* in eastern North America, following which the species are listed with synonymy and a statement of their range. The following are new: *E. Chamissonis* C. A. Meyer var. *aquatile* (Norman), *E. spissum*, and *E. spissum* var. *erubescens* (Fernald).—S. F. Blake.

5618. FRIES, THORE C. E. *Plectranthastrum, eine neue afrikanische Labiaten-Gattung*. [*Plectranthastrum, a new African genus of Labiatae.*] *Repert. Spec. Nov. Regni Veg.* 19: 296-297. 1924.—One species of this new genus, *Plectranthastrum*, is described, namely, *P. clerodendroides* from German East Africa.—Robert Woodson.

5619. GLEASON, H. A. Studies on the flora of northern South America—V. *Bull. Torrey Bot. Club* 52: 181-196. 1925.—*Dioscorea lanosa*, *D. oblonga*, and *D. trichanthera* are described as new species from British Guiana and *D. megacarpa* is given as a new name for *D. truncata* "Miq.," Schomb. Faun. & Fl. Brit. Guiana, 899, 1848, not *D. truncata* Miq., Linnaea 18: 23. 1844. *Vernonia trichoclada* from Peru, *V. flexipappa* from Ecuador, *V. trilectorum*, *V. Pennellii*, *V. spinulosa*, and *V. trichotoma* from Colombia; *Rapatea linearis*, *Bihai sylvestris*, and *Renealmia pedicellaris* from British Guiana; *Renealmia pilosa* from Colombia, and *Ischnosiphon foliosus* from Colombia are described as new species. *Dupatya roraimae* (Oliver) and *D. Karstenii* (Ruhl.) are made new combinations. *Gnetum Cruzianum* is described as a new species from British Guiana.—P. A. Munz.

5620. GLEASON, H. A. Studies on the flora of northern South America—VI. *Bull. Torrey Bot. Club* 52: 325-340. *Fig. 1-4.* 1925.—In the Melastomataceae certain noteworthy species are discussed, the following being of special nomenclatorial interest: *Pterogastra glabra* n. sp. (Venezuela); *Tibouchina lepidota* var. *intermedia* n. var. (Ecuador); *Ernestia lata* n. sp. (Brazil); *E. glandulosa* n. sp. (British Guiana); *Copedesma* n. gen. for *C. nites* n. sp. (British Guiana); *Acisanthera glomerata* n. sp. (Surinam); *Monochaetum rotundifolium* Cogniaux n. sp., *M. villosum* n. sp., and *M. coronatum* n. sp. (Colombia); *Rhynchanthera microphylla* n. sp. (British Guiana); *Siphanthera alsinoides* n. sp., *Poteranthera minor* n. sp., and *Centronia mutabilis* n. sp. (Colombia).—P. A. Munz.

5621. GLEASON, H. A. Studies on the flora of northern South America—VII. *Bull. Torrey Bot. Club* 52: 373-388. *Fig. 1-4.* 1925.—In continuation of a study of Melastomataceae, the following novelties are described: *Saccolena* n. gen. for *S. dimorpha* n. sp., and *Diolena lanceolata* (Colombia); *Leandra purpurea* (British Guiana); *Amphitoma* n. gen. for *A. flavescens* n. sp. (Colombia); *Miconia polita* (British Guiana); *M. macrotis* (Griseb.) Cogn. var. *canescens* (Ecuador); *M. plumosa* (British Guiana); *M. imbricata*, *M. rupicola*, and *M. Smithii* Cogniaux (Colombia); *M. panicularis* (British Guiana); *M. caucana*, *M. pulvinata*, and *M. Killipii* (Colombia); *M. virgulata* (British Guiana); and *M. scutata* (Ecuador). Two new combinations are made: *Heterotrichum rostratum* (Naud.) and *H. polyandrum* (Benth.).—P. A. Munz.

5622. GLEASON, H. A. Studies on the flora of northern South America—VIII. *Bull. Torrey Bot. Club* 52: 447-430. *Fig. 1-2.* 1925.—The following new species of Melastomata-

ceae are described: *Miconia subalpina*, *M. aggregata*, *M. Pennellii*, *M. penicillata*, *M. minuta*, *M. mimica*, *M. cuneifolia*, *M. turgida*, *M. Cladonia*, *Clidemia cymosa*, *Killipia* n. gen. for *K. quadrangularis* n. sp., *Ossaea grandifolia*, *Blakea fasciculata*, *B. brachyura* and *Topobea alternifolia* from Colombia; and *Blakea quadriflora* from Ecuador.—P. A. Munz.

5623. GRAEBNER, P. *Cyperus articulatus* var. *erythostachys* aus Deutsch-Östafrika. [*Cyperus articulatus* var. *erythostachys* from German East Africa.] Repert. Spec. Nov. Regni Veg. 16: 25. 1919.—This new variety is fully described.—Robert Woodson.

5624. GRAEBNER, P. Eine neue *Scleria* (*S. Kindtiana*) aus Angola. [A new *Scleria* (*S. Kindtiana*) from Angola.] Repert. Spec. Nov. Regni Veg. 16: 24-25. 1919.—This new species, *Scleria Kindtiana*, is described in detail.—Robert Woodson.

5625. GUILLAUMIN, A. Recherches sur l'anatomie et la classification of *Balanopsidacées*. [Studies of the anatomy and classification of *Balanopsidaceae*.] Rev. Gén. Bot. 37: 433-449. 1925.—Study of the specimens of *Balanopsidaceae* in the herbarium of the Museum of Paris confirmed and completed the findings of Solereder concerning the anatomy of these plants and determined the relationships of the family. Finally, it allowed reconciliations between species to be seen which, being based on internal rather than external characters, are more probably of real significance.—J. C. Gilman.

5626. HARMS, H. Beiträge zur Kenntnis amerikanischer Cucurbitaceen I. [Contributions to knowledge of American Cucurbitaceae I.] Repert. Spec. Nov. Regni Veg. 19: 171-173. 1923.—A list of American *Cucurbitaceae* is made, containing the descriptions of the following new species: *Sicyos acariaeanthus*, Peru; *S. chaetocephalus*, Peru; and *S. Weberbaueri*, Peru.—Robert Woodson.

5627. HARMS, H. Beiträge zur Kenntnis der amerikanischen Passifloraceen. I, II. [Contributions to the knowledge of the American Passifloraceae. I, II.] Repert. Spec. Nov. Regni Veg. 19: 25-32, 56-60. 1923.—After a treatment of Weberbauer's collection of *Passifloraceae* in Peru, including the enumeration of several species of *Passiflora* with critical notes, the following new species from Brazil are described: *Passiflora Luetzelburgii*, *P. deidamioides*, *P. Ernesti*.—Robert Woodson.

5628. HARMS, H. Berichtigung. [A correction.] Repert. Spec. Nov. Regni Veg. 16: 450. 1920.—The following new specific name is proposed: *Acacia Feddeana* (*A. Fiebrigii* Harms, Repert. Spec. Nov. Veg. 16: 351. 1920, not *A. Fiebrigii* Harms, IBID. 8: 553. 1910).—J. M. Greenman.

5629. HARMS, H. *Chaetocalyx Weberbaueri* spec. nov. aus Peru. [*Chaetocalyx Weberbaueri* n. sp. from Peru.] Repert. Spec. Nov. Regni Veg. 17: 132. 1921.—This new species is based on specimens collected by Weberbauer, No. 6020, at Palamba, Peru.—J. M. Greenman.

5630. HARMS, H. Eine neue Art der Gattung *Luffa* aus Arabien. [A new species of the genus *Luffa* from Arabia.] Repert. Spec. Nov. Regni Veg. 19: 232-234. 1923.—*Luffa Forskalii* Schweinfurth n. sp. is described.—Robert Woodson.

5631. HARMS, H. Eine neue *Inga*-Art aus Peru. [A new species of *Inga* from Peru.] Repert. Nov. Spec. Regni Veg. 16: 245. 1919.—*Inga Augusti* n. sp. is described in detail.—Robert Woodson.

5632. HARMS, H. Eine neue *Piptadenia*-Art aus Brasilien. [A new species of *Piptadenia* from Brazil.] Repert. Spec. Nov. Regni Veg. 17: 203-204. 1921.—*Piptadenia Glaziovii* n. sp. is described from Glaziov's Nos. 8440, 11924.—J. M. Greenman.

5633. HARMS, H. Eine neue *Schefflera*-Art aus Yunnan, Sch. *hypoleucoides*. [A new *Schefflera* species from Yunnan, Sch. *hypoleucoides*.] Repert. Spec. Nov. Regni Veg. 16: 246. 1919.—*Schefflera hypoleucoides* n. sp., from China, is described in detail.—Robert Woodson.

5634. HARMS, H. Einige Leguminosen aus China. [Some Leguminosae from China.] Repert. Spec. Nov. Regni Veg. 17: 133-137. 1921.—The following new species are described: *Albizzia Simeonis*, *Acacia Teniana*, *Bauhinia Mairei*, *B. Henryi*, *Craspedolobium* n. gen., *C. Schochii*, *Cochlianthus montanus* (*Mucuna montana* Diels), and *Dolichos Henryi*.—J. M. Greenman.

5635. HARMS, H. Einige *Meliaceen* aus Peru. II. [Some new *Meliaceae* from Peru. II.] Repert. Spec. Nov. Regni Veg. 19: 55-56. 1923.—The following new species are described: *Gaurea pilanthera* C. DC. and *Trichilia Weberbaueri* C. DC. A critical note on *Trichilia tomentosa* Kunth is recorded.—Robert Woodson.

5636. HARMS, H. Fünf neue Leguminosen aus Deutsch-Südwestafrika. [Five new legumes from German Southwest Africa.] Repert. Spec. Nov. Regni Veg. 16: 358-360. 1920.—The following 5 new species are described: *Lotononis listioides*, *L. Curtii*, *L. pallidirosea*, *L. brachyantha*, and *Lebeckia Dintori*.—Robert Woodson.

5637. HARMS, H. *Hosackia Endlichii* spec. nov. aus Mexico. [*Hosackia Endlichii* n. sp. from Mexico.] Repert. Spec. Nov. Regni Veg. 17: 132. 1921.—This species is based on collections made by Endlich in the state of Chihuahua.—J. M. Greenman.

5638. HARMS, H. Leguminosae americanae novae. IV, V, VI. Repert. Spec. Nov. Regni Veg. 19: 9-18, 61-70. 1923; *IBID.* 288-294. 1924.—The following new genera, species, and varieties are described and extensive exsiccatae are cited: *Apurimacia* n. gen., *A. Michellii* (*Gliricidia Michellii* Rusby), Bolivia; *A. libertatis*, Peru; *A. Incarum*, Peru; *A. lonchocarpoides*, Peru; *Humboldtiella* n. gen., *H. ferruginea* (*Robinia ferruginea* HBK.), Trinidad; *Coursetia Seleri* and var. *Caeciliae*, Mexico; *C. orbicularis* (Benth.) var. *mantaroana*, Peru; *Galactia Augusti*, Peru; *G. Shumbae*, Peru; *G. stereophylla*, Brazil; *Affonsea Dusenii*, Brazil; *A. Schwebeliana*, Brazil; *Inga brevipedicellata* Mexico; *I. Heinei*, Venezuela; *I. sciadodendron*, Mexico; *I. zacuanpanica*, Mexico; *I. Endlichii*, Mexico; *I. latibracteata*, Mexico; *Stryphnodendron excelsum*, Costa Rica; *Bauhinia Kalbreyeri*, Colombia; *B. Stuebeliana*, Colombia; *Hybosema* n. gen., *H. Ehrenbergii* (*Robinia Ehrenbergii* Schlecht.), Guatemala; *Margaritolobium* n. gen., *M. luteum*, (*Gliricidia lutea* Johnston), Venezuela; *Lennea melanocarpa* Vatke (*Robinia melanocarpa* Schlecht.), Mexico; *Sesbania Brenningii*, Ecuador; *Stylosanthes psammophila*, Peru; *Ormosia Glazioviana*, Brazil; *O. Zahnii*, Cameroon; *Dussia Lehmannii*, Colombia; and *D. cayennensis*, French Guiana.—Robert Woodson.

5639. HARMS, H. Neue Arten der Gattungen *Calliandra* und *Pithecolobium*. [New species of the genera *Calliandra* and *Pithecolobium*.] Repert. Spec. Nov. Regni Veg. 17: 87-93. 1921.—The following new species are described: *Calliandra Langlassei*, Mexico; *C. pallatangensis*, Ecuador; *C. Sodiroi*, Ecuador; *C. amblyphylla*, Kamerun; *C. Weberbaueri*, Peru; *C. Caeciliae*, Guatemala; *C. Luetzelburgii*, Brazil; *C. Seleri*, Mexico; *C. Lehmannii*, Colombia; *C. microcalyx*, Brazil; *C. fuscipila*, Brazil; *Pithecolobium malacotrichum*, Brazil; *P. minarum*, Brazil; *P. Lehmannii*, Colombia; and *P. Grisebachianum*, Argentina.—J. M. Greenman.

5640. HARMS, H. Über einige brasilianische *Lupinus*-Arten mit einfachen Blättern. [Some Brazilian species of *Lupinus* with simple leaves.] Repert. Spec. Nov. Regni Veg. 17: 4-5. 1921.—*Lupinus Sellowianus* n. sp. is described from Brazil. Notes are recorded on *L. attenuatus* Gardn. var. *guaraniticus* Hassler, *L. insignis* Glaziov, and *L. paraguariensis* Chodat & Hassler.—J. M. Greenman.

5641. HARMS, H. Zwei neue Acacia-Arten (*A. Flebrigii* und *A. Weberbaueri*) aus Südamerika. [Two new species of *Acacia* from South America.] Repert. Spec. Nov. Regni Veg. 16: 351-352. 1920.—These 2 new species, from Peru are described in detail.—Robert Woodson.

5642. HARMS, H. Zwei neue *Pithecolobium*-Arten aus Amerika. [Two new species of *Pithecolobium* from America.] Repert. Spec. Nov. Regni Veg. 16: 350. 1920.—Two new species are described: *Pithecolobium Seleri*, Mexico; *P. Weberbaueri*, Peru.—Robert Woodson.

5643. HARPER, ROLAND M. A new heart-leaf and other interesting plants from Autauga County, Alabama. *Torreya* 24: 77-83. 1 fig. 1924.—*Hezastylis speciosa* is described as a new species. The distribution and habitat of this and other rather rare plants in Alabama are discussed.—Wm. G. McGinnies.

5644. HASSLER, ARNE. En stambladig form av *Pyrola minor* L. [*Pyrola minor* L. with a leaf on the stem.] Svensk Bot. Tidskr. 19: 429-430. 1 fig. 1925.

5645. HASSLER, E. Ex herbario Hassleriano: Novitates paraguarienses XXII, XXIII, XXIV. Repert. Spec. Nov. Regni Veg. 16: 25-29, 151-166, 220-233. 1919.—The following new species, subspecies, varieties, and forms are included: *Eupatorium pseudo-prasiifolium*, *Tessaria straminea* (*Conyza straminea* Chod.), *T. pluchaeoides*, *Aster gnaphalioides* (*Leucopsis gnaphalioides* Bak.), *A. macrocephalus* (*L. macrocephala* Bak.) var. *pseudognaphalioides*, *Podocoma Blanchetiana* Bak. var. *intermedia*, *Gochnatia cordata* Less. var. *mollissima*, *Trixis divaricata* Spreng. var. *glandulifera*, *T. brasiliensis* DC. vars. *genuina* and *Sellowi* (*T. Sellowi* Less.), *T. thrincoides* (*Leuceria thrincoides* Griseb.), *T. ophiorrhiza* Gardn. var. *glandulifera*, *Porophyllum lanceolatum* DC. vars. *genuinum*, *lineare* (*P. lineare* DC.) and *glaucum* (*P. lance-*

olatum Bak.), *Schrankiastrum* n. gen. of the Leguminosae, *S. insigne*, *Acacia amumbayensis*, *A. paniculata* Willd. var. *Martii* (*A. Martii* Benth.), *A. riparia* HBK. f. *intermedia*, var. *pseudo-adhaerens* (*A. pseudo-adhaerens* Hassler), *A. velutina* DC. var. *moniden* f. *ferox* and f. *subinermis*, *Prosopis Algarobilla* Griseb. var. *Nubly*, *Injifolium* Willd. vars. *typica* and *marginata* f. *genuina* and f. *pedicellaris*, var. *intermedia*, *Enterolobium guaranicum*, *Pithecolobium tortum* Mart. f. *scalare* (*P. scalare* Griseb.), *Caesalpinia rubicunda* Benth. vars. *genuina*, *intermedia* and *Hauthalii*, *Bauhinia forficata* Lk. var. *pruinosa*, *Capaifera Langsdorffii* Desf. var. *rupestris*, *Lupinus velutinus* Benth. var. *spectabilis*, *L. attenuatus* Gardn. var. *guaraniticus*, *L. heptaphyllus* (*Cystissus heptaphyllus* Vell.) and var. *pseudolinearis*, *L. paraguayensis* Chod. & Hassler var. *Missionum*, *Crotalaria stipularia* Desv. vars. *Balansae* (*C. Balansae* Micheli) and *prostrata* (*C. Pohliana* var. *prostrata* Chod. & Hassler), *Cracca caribaea* Benth. vars. *Edwardsii* (*C. Edwardsi* A. Gray), *glandulifera* (*C. glandulifera* Benth.) f. *dubia* (*Benth-amantha caribaea* var. *dubia* O. Kuntze), *Indigofera guaranítica*, *I. lespedezioides* HBK. vars. *typica* and *pascuorum* (*I. pascuorum* Benth.), *Tephrosia sessiliflora* (*Cytisus sessiliflorus* Poir.), *T. marginata* with vars. *cinerascens* and *pseudo-rufescens*, *T. adunca* Benth. var. *genuina* f. *pseudo-marginata*, var. *rufescens* (*T. rufescens* Benth.) f. *paraguayensis* (*T. rufescens* var. *paraguayensis* Ulbr.), var. *guarantica* (*T. guarantica* Chod. & Hassler), var. *subglabrata*, *Tephrosia cinerea* Pers. var. *typica* f. *pseudo-adunca*, *Stylosanthes viscosa* Sw. f. *typica*, *S. guayanensis* Sw. var. *genuina* f. *esetosa* and f. *viscosissima*, var. *intermedia* (*S. montevidensis* Vog.), subsp. *anomala*, var. *longisetata*, var. *marginata*, *S. montevidensis* Vog. f. *glabrata* and *arenosa*, var. *juncea* f. *typica* and f. *setosa*, *Lathyrus paraguayensis*, *L. Missionum*, *L. guaraniticus*, *L. subulatus* Lam. var. *longifolius*, *L. pubescens* H. & A. f. *hirsutulus*, *L. magellanicus* Lam. f. *longepetiolatus*, *Galactia fasciculata*, *G. marginalis* Benth. subsp. *longepedunculata* (var. *longepedunculata* Chod. & Hassler), vars. *unifoliolata*, *trifoliolata*, *G. decumbens* (*Collaea decumbens* Benth.) and var. *Benthamiana*, *G. tenuiflora* W. & A. var. *flaviflora* (*G. flaviflora* Micheli), *Camptosema paraguayense* and var. *parviflorum*, *Dioclea paraguayensis*, *Rynchosia Senna* Gill. vars. *genuina*, *diversifolia* f. *genuina* and f. *glabrata*, *R. texana* Torr. & Gray var. *microphylla*, *R. reticulata* DC. f. *Balansae*, *R. Schomburgkii* Benth. f. *pallida*, *Mycrocarpus frondosus* Allem. f. *paraguayensis*, and *Dalbergia variabilis* Veg. var. *intermedia*.—Robert Woodson.

5646. HEIMERL, A. *Nyctaginaceae novae*. Repert. Spec. Nov. Regni Veg. 17: 1-3. 1921.—The author describes *Pisonia Broadwayana* n. sp. from Tobago, West Indies. Notes are given also on *P. cuspidata* Heimerl and *P. obtusata* Jacq.—J. M. Greenman.

5647. HELMS, ANNA. En Birk med lappede Blade. [A birch with laciniate leaves.] Bot. Tidsskr. 38: 332-334. 1 fig. 1925.—In one of the big forests of Jutland a single birch tree was found, which in all characters, except for the laciniate leaves, was typical of *Betula pubescens* Ehrh. A form of this species with laciniate leaves is not mentioned previously in the literature; the tree in question is therefore designated as *Betula pubescens* Ehrh. f. *laciniata* A. Helms.—C. A. Jörgensen.

5648. HERRING, P. Classifications of *Rosa*. Dansk Botanisk Arkiv. 4^o: 1-24. 1925.—Annotated schemes of the most important *Rosa* systems from 1800 to the present day are given. They are by De Candolle, Lindley, du Mortier, Seringe, D. W. Koch, Déséglise, Crépin, Karl Koch, Christ, Gandoger, Focke, Baker, Parmentier and Schwertschlager. The author then gives a short account of his view on the genus and proposes the following system: (1) subgen. *Exstipulatae*; and (2) subgenus *Stipulatae*. The latter is divided into the following sections: *Microphyllæ*, *Minutifoliæ*, *Timpinellifoliæ*, *Luteæ*, *Sericeæ*, *Carolinæ*, *Cinnamomeæ*, *Elymaicæ*, *Bracteateæ*, *Lævigatæ*, *Banksianæ*, *Indicæ*, *Synstylæ*, *Caninæ*, and *Gallicæ*.—C. A. Jörgensen.

5649. HERTER, W. Die *Urostachys*-Arten der Antillen. [The Antillean species of *Urostachys*.] Repert. Spec. Nov. Regni Veg. 19: 161-170. 1923.—The following new species are described and combinations are made: *Urostachys haitiensis*, Haiti; *U. Sintenisii*, Porto Rico; *U. saururus* (*Lycopodium saururus* Lam.), Haiti; *U. Ulei*, Haiti, Santo Domingo; *U. taxifolius* (*L. taxifolium* Sw.), Haiti, Guadeloupe, Cuba, Jamaica, etc.: *U. Herminieri* (*L. Herminieri* Spring.), Guadeloupe, *U. Brauseanus* (*L. Brauseanum* Hert.), Margarita; *U. Sieberianus* (*L. Sieberianum* Spring.), Haiti, St. Kitts, Guadeloupe, Martinique; *U. brutus* (*L.*

brutum Hert.), Trinidad; *U. reflexus* (*L. reflexum* Lam.), Haiti, Guadeloupe, St. Vincent; *U. rigidus* (*L. rigidum* Gmel.), Jamaica, Haiti, etc.; *U. intermedius* (*L. intermedium* Spring.), Guadeloupe; *U. Tuerckheimi* (*L. Tuerckheimi* Maxon), Haiti; *U. portorizensis* (*L. portorizense* Underw. & Lloyd), Porto Rico; *U. uniformis* (*L. uniforme* Cham. ex Bory), Cuba, Haiti, Porto Rico, etc.; *U. trichodendron* (*L. trichodendron* Hert.), Guadeloupe, Martinique, St. Vincent; *U. Wilsoni* (*L. Wilsoni* Underw. & Lloyd), Porto Rico; *U. dichotomus* (*L. dichotomum* Jacq.), Cuba, Haiti, etc.; *U. homocarpus*, Haiti, Santo Domingo; *U. mexicanus* (*L. mexicanum* Hert.), Cuba, Jamaica, Haiti, etc.; *U. nitens* (*L. nitens* Schlecht. & Cham.), Guadeloupe?; *U. mandiocanus* (*L. mandiocanum* Raddi), Cuba, etc.; *U. pithyoides* (Schlecht. & Cham.), Amer. Cent., and var. *cubanus*, Cuba; *U. gigas*, (*L. gigas* Hert.), Cuba; *U. chamaepeuce* (*L. chamaepeuce* Hert.), Cuba, etc., and var. *Urbanianus*, Grenada; *U. flaccidus* (*L. flaccidum* Fée), Haiti; *U. tenuicaulis* (*L. tenuicaule* Underw. & Lloyd), Porto Rico; *U. guatemalensis* (*L. guatemalense* Maxon), Haiti, Guadeloupe; *U. sarmentosus* (*L. sarmentosum* Spring.), *U. linifolius* (*L. linifolium* L.), Cuba, Jamaica, etc., and var. *minor*, Guadeloupe; *U. cubanus* (*L. cubanum* Hert.), Cuba; *U. Schwendenerii* (*L. Schwendenerii* Hert.), Cuba, etc.; *U. subtubulosus*, Haiti, Santo Domingo, etc.; *U. Picardae* (*L. Picardae* Christ.), Cuba, Haiti; *U. myrsinites*, (*L. myrsinites* Lam.), Haiti; *U. aqualupianus* (*L. aqualupianum* Spring.), Cuba, etc.—Robert Woodson.

5650. HUTCHINSON, J. Contributions towards a phylogenetic classification of flowering plants: III. Kew Bull. 1924: 49–66. 5 maps. 1924.—This paper takes up the genera of Gymnosperms distributed through the Cycadaceae, Ginkgoaceae, Taxaceae, Pinaceae, and Gnetaeae. Keys are given to the genera of Cycadaceae, Taxaceae, and Pinaceae. The type species are indicated for each genus. The tribes and genera are delimited in the keys. The maps indicate the distribution of the principal genera. A diagram illustrates the approximate relationships of living Gymnosperms.—T. J. Fitzpatrick.

5651. JUMELLE, HENRI. Le tabac tombak des Alaouites. [The tombak tobacco of the Alaouites.] Compt. Rend. Acad. Sci. Paris 181: 169–172. 1925.—In Persia and the Levant the name tombak and toumbeki is given to a very strong tobacco (5.835% nicotine). There is some difference of opinion as to the taxonomic identity of the plant from which this tobacco is produced. It was once thought to be a *Lobelia*. Though *N. rustica* is known to be high in nicotine, yet the leaf characters of this plant are quite different from that. *N. persica* furnishes the celebrated tobacco of Chiraz, and is closely related to *N. alata*. Seed of a plant purporting to be tombak were grown and the characters of the plant proved to be no more similar to those of *N. persica* than to *N. rustica*. Then a comparison was made of plants grown from seed of the tombak of the Alaouites with those of the ordinary tobacco of that same territory. The differences between the 2 are recorded. It is concluded that the Alaouite tombak is probably the same as that of Persia, and that those 2 Syrian tobaccos are probably both varieties of *N. Tabacum*, the tombak being a stunted type.—C. H. Farr.

5652. KNUTH, R. Geraniaceae novae. Repert. Spec. Nov. Regni Veg. 19: 228–232. 1923.—The following new species are described: *Geranium Henryi*, China; *G. hupehanum*, China; *G. orientali-tibeticum*, eastern Thibet; *G. strigellum*, China; *G. Wilsonii*, China; *Pelargonium karrooense*, Africa; *P. subherbaceum*, Transvaal.—Robert Woodson.

5653. KRÄNZLIN, FR. Bignoniaceae novae i, ii, iii, iv. Repert. Spec. Nov. Regni Veg. 17: 18–22, 54–63, 115–125, 215–226. 1921.—The following new species are described: *Arrabidaea Candelabrum* and *A. syringothyrsus*, Brazil; *A. Pseudo-Chica*, Mexico; *A. rhodothyrsus*, Costa Rica; *Petastoma cuyabense*, *P. Bradeanum*, *P. leiophyllum*, *P. macrocalyx*, *P. Malmei*, *P. urceolare*, Brazil; *P. Langlasséanum*, Mexico; *P. ocositense*, Guatemala; *P. Tonduzianum*, Costa Rica; *P. laurifolium* and *P. multiglandulosum*, Bolivia; *Adenocalymna cearensis* and *A. Duséni*, Brazil; *A. Friesiana*, Argentina; *Anemopaegma Tonduzianum*, Costa Rica; *A. Fiebrigianum*, Paraguay; *Distictis rosea*, Brazil; *Haplophorium Dusénianum*, Brazil; *Lundia Duséniana* and *L. Gluzioviana*, Brazil; *L. Schumanniana*, Mexico; *Meiloea Duséniana*, Brazil; *Setilobus vincentinus*, St. Vincents, W. I.; *Pleonotoma dispar* and *P. marcerotis*, Brazil; *Soldanahaea costaricensis*, Costa Rica; *Tabebuia micrantha*, Brazil; *Tecoma Campinae*, *T. grandis*, *T. Uleana*, *T. matogrossensis*, *T. Schumannii*, and *T. Hemmendorffiana*, Brazil; *T. grandiceps*, Peru; *T. Moritziana*, Venezuela; *T. Eggersii*, Porto Rico; *T. Palmeri*, Mexico; *T. gabonensis*,

Gabon, western Africa; *T. punctatissima*, Colombia; *Tecomaria Ricasoliana* (Taufani) Kränzl., Paraguay?; and *Jacaranda Trianae*, Colombia. An amplified description is also given of *Tecoma Berteri* from Santo Domingo.—*J. M. Greenman.*

5654. KRÄNZLIN, FR. Orchidaceae Ténianae Yunnanenses. Repert. Spec. Nov. Regni Veg. 17: 99–112. 1921.—The author lists 41 species of orchids which were collected in the province of Yunnan, China, by SIMÉON TÉN. The following species are described as new to science: *Epipactis discolor*, *Platanthera praeustipetala*, *Habenaria atramentaria*, *H. peyent-sinensis*, *H. bihamata*, *H. Simeonis*, *H. crassilabia*, *Satyrium microcephalum*, *Hemipilia silvatica*, *Herminium Ténianum*, *Coelogyne elegantula*, and *Liparis Téniana*.—*J. M. Greenman.*

5655. KRÄNZLIN, FR. Zwei Namensänderungen bei Calceolaria. [Two changes of name in Calceolaria.] Repert. Spec. Nov. Regni Veg. 16: 450. 1920.—Two new names are proposed, as follows: *Calceolaria larecajensis* (*C. malacophylla* Kränzl. in Engl. Bot. Jahrb. (Beiblatt 111) 67: 1913, not *C. malacophylla* Kränzl. in Ann. K. K. Hofmuseum Wien 22: 191. 1907) and *C. ludens* (*C. ramosissima* Kränzl. in Engl. Bot. Jahrb. (Beiblatt 111) 72: 1913, not *C. ramosissima* Kränzl. in Repert. Spec. Nov. Regni Veg. 1: 107. 1905).—*J. M. Greenman.*

5656. KRAUSE, K. Ein neues Xanthosoma aus Ecuador. [A new Xanthosoma from Ecuador.] Repert. Spec. Nov. Regni Veg. 17: 144. 1921.—*Xanthosoma Rimbachii* n. sp. is described.—*J. M. Greenman.*

5657. KRAUSE, K. Zwei neue Manettia-Arten aus Peru. [Two new species of Manettia from Peru.] Repert. Spec. Nov. Regni Veg. 19: 308–309. 1924.—*Manettia leucantha* and *M. Weberbaueri* n. sp. are described from Peru.—*Robert Woodson.*

5658. KÜKENTHAL, G. Cyperaceae novae. V. Repert. Spec. Nov. Regni Veg. 16: 430–435. 1920.—The following new species are described: *Cyperus sandwicensis*, Sandwich Islands; *C. Rockii*, Sandwich Islands; *C. Fauriei*, Sandwich Islands; *Heleocharis maculosa* R. Br. var. *irritans*, Masatierra; *Scirpus Rockii*, Sandwich Islands; *S. riparius* Presl. var. *paschalis*; *Fimbristylis mariantha* Gaudich. var. *foena*, Philippine Islands; *Gahnia globosa* Mann var. *interrupta*, Sandwich Islands; *G. javanica* Moritz var. *ellipsoidea*; *Uncinia costata*, Juan Fernandez; *Carex bucharica*, Buchara; *C. Meeboldiana*, Burma; *C. Johnstonii* Boeck. var. *brevifructus*, Nyassaland; *C. Suksdorfii* and var. *ovalis*, Washington; *C. sandwicensis* Boeck. f. *laxiflora* and f. *subverticillata*, Sandwich Islands; *C. montis ceka* Hillebr. var. *viridans*, Sandwich Islands.—*Robert Woodson.*

5659. LOESENER, TH. Mexikanische und zentralamerikanische Novitäten. VI. Repert. Spec. Nov. Regni Veg. 16: 200–212. 1919.—An extensive compilation is effected, including the following new species: *Nemastylis silvestris*, Mexico; *Iresine Endlichii*, Mexico; *I. latifolia* B. & H. var. *velutina*, Mexico; *Forchhammeria Purpusii*, Mexico; *Pithecoctenium tribrachiatum*, Mexico; *Stenolobium Tronadora*, Mexico; and *S. quinquejugum*, Mexico.—*Robert Woodson.*

5660. MACKENZIE, KENNETH K. *Limodorum tuberosum* L. *Rhodora* 27: 193–196. 1925.—The history of the names *Limodorum tuberosum* L. and *Calopogon pulchellus* (Salisb.) R. Br. is discussed. The 2 are synonymous and refer primarily to a plant of the eastern U. S. A., not to a West Indian species of *Bletia*, for which *L. tuberosum* has been used by some writers. The correct name is *Limodorum tuberosum*.—*S. F. Blake.*

5661. MARKGRAF, FR. Eine neue brasilianische Thymelaeaceae (*Daphnopsis ericiflora*). [A new Brazilian Thymelaeaceae (*Daphnopsis ericiflora*).] Repert. Spec. Nov. Regni Veg. 19: 113. 1923.—This new species is fully described.—*Robert Woodson.*

5662. MARKGRAF, FR. Eine neue Myristicaceae aus Brasilien. [A new Myristicaceae from Brazil.] Repert. Spec. Nov. Regni Veg. 19: 24. 1923.—The following new species is described: *Virola calophylloidea*, northern Brazil.—*Robert Woodson.*

5663. MARQUAND, C. V. B. An undescribed variety of *Tilia Henryana*. Kew Bull. 1924: 112. 1924.—The variety *Carlesii* is described from specimens collected by W. R. Carles in the woods between Nanking and Chinkiang, province Kiang-su, China, December, 1895.—*T. J. Fitzpatrick.*

5664. MATTFELD, JOH. Compositae novae Austro-Americanae. I. Repert. Spec. Nov. Regni Veg. 17: 178–185. 1921.—The following new species are described from Peru: *Gynoxis Henrici*, *G. Poggeana*, *G. monzonensis*, *G. Weberbaueri*, *G. myrtoides*, *G. fallax*, and *G. pachyphylla*.—*J. M. Greenman.*

5665. MATTFELD, JOH. Eine neue Helogyne aus Peru. [A new Helogyne from Peru.] Repert. Spec. Nov. Regni Veg. 19: 78-79. 1923.—*Helogyne calocephala* n. sp. is fully described and discussed.—Robert Woodson.

5666. MATTFELD, JOH. Eine neue mexikanische Jatropha (J. Harmsiana) aus der Sektion Mozinna. [A new Mexican Jatropha (J. Harmsiana) of the section Mozinna.] Repert. Spec. Nov. Regni Veg. 19: 120-121. 1923.—*Jatropha Harmsiana* n. sp. is described in detail.—Robert Woodson.

5667. MEZ, CARL. Additamenta monographica 1919. Repert. Spec. Nov. Regni Veg. 16: 2-10, 65-79. 1919; IBID. 305-312, 410-425. 1920.—The following new species are described: (1) Bromeliaceae—*Fascicularia Kirchhoffiana* (*Rhodostachys pitcairniifolia* var. *Kirchhoffiana* Wittm.), Chile; *Cryptanthus carnosus*, Brazil; *Bromelia Wercklei*, Costa Rica; *B. grandiflora*, described from plants grown in the Botanical Garden at Victoria, Cameroon; *Aregelia indecora*, Brazil; *Nidularium Wettsteinii*, Brazil; *N. affine*, Brazil; *N. minutum*, Brazil; *N. Loesenerii*, cultivated in Berlin. Bot. Gard.; *Canistrum Binoti*, Brazil; *Aechmea Benrathii*, Brazil; *Billbergia mexicana*, Mexico; *B. Buchholtzii*, Brazil; *B. Wacketii*, Brazil; *Pitcairnia cassapensis*, Peru; *P. Hartmanni*, Venezuela; *P. viridis*, Peru; *P. brevicalycina*, Peru; *Deuteroconhia divaricata*, Paraguay; *Puya Hauthalii*, Bolivia; *P. cylindrica*, Peru; *P. reflexiflora*, Peru; *P. isabellina*, Peru; *Dyckia Rojasii*, Paraguay; *D. minutiflora*, Paraguay; *D. grandiflora*, Paraguay; *D. virgata*, Paraguay; *D. apensis*, Paraguay; *D. tomentella*, Paraguay; *D. longifolia*, Paraguay; *D. velloziifolia*, Paraguay; *D. interrupta*, Paraguay; *D. choristaminea*, Brazil; *Hechtia Galeottii*, Mexico; *Vriesea pauciflora*, Brazil; *Thecophyllum Lehmannianum*, Colombia; *Tillandsia acroleuca*, Mexico; *T. Rodrigueziana*, Guatemala; *T. domingensis*, San Domingo; *T. subulifera*, Trinidad; *T. spuria*, Costa Rica; *T. commixa* (*T. parviflora* Bak., not Ruiz & Pavon), Peru; *T. australis* (*T. rubra* Griseb., not Ruiz & Pavon), Argentina; *T. crenulipetala*, Colombia; *T. rhododactyla*, Brit. Guiana; *T. oroyensis*, Peru; *T. monobotrya*, Costa Rica; *T. monstrum*, Colombia; *T. pretiosa*, Ecuador; *Guzmania costaricensis*, Costa Rica; (2) Lauraceae—*Ajouea Lützelburgii*, Brazil; *Acrodichlidium amarum*, Bolivia; *Silvia synandra*, Brazil; *Endlicheria bracteata*, Peru; *Ocotea albo-punctulata*, Brazil; *O. Roraimae*, Brit. Guiana; *O. piurensis*, Peru; *Nectandra intermedia*, Brazil; *N. dioica*, Brazil; (3) Myrsinaceae—*Maesa grossedentata*, Phil. Is.; *M. piscatorum*, Phil. Is.; *M. lobuligera*, Phil. Is.; *Ardisia abovirens*, Brazil; *A. multilineata*, Guatemala; *A. cincta*, Phil. Is.; *A. pulchella*, Phil. Is.; *A. milleflora*, Phil. Is.; *A. lan-aënsis*, Phil. Is.; *A. negroënsis*, Phil. Is.; *A. geissanthoides*, Phil. Is.; *A. glauca*, Phil. Is.; *A. magnifica*, Phil. Is.; *A. palawanensis*, Phil. Is.; *A. dataënsis*, Phil. Is.; *A. membranifolia*, Phil. Is.; *A. macropus*, Phil. Is.; *A. reptans*, Phil. Is.; *Parathesis amazonica*, Brazil; *Discocalyx filipes*, Phil. Is.; *D. hymenandroides*, Phil. Is.; *D. dolichopus*, Phil. Is.; *D. crenulatus*, Phil. Is.; *Grammadenia Weberbaueri*, Peru; *Geissanthus obtusus*, Peru; *Conomorpha discolor*, Peru; *C. panniculata*, Brit. Guiana; *C. rigida*, Peru; *Stylogyne serpentina*, Peru; *Jubilaria Radlkoferi*, Phil. Is.; *J. magnoliifolia*, Phil. Is.; *Embelia latifolia*, Phil. Is.; *E. obtusiuscula*, Phil. Is.; *E. Vaupehii*, Samoa; *Tapeinosperma acutangula*, New Caledonia; *Rapanea peregrina*, Phil. Is.; *R. nitida*, Brit. Guiana; *R. ligustrina*, Paraguay; (4) Theophrastaceae—*Clavija gracilis*, Brazil.—Robert Woodson.

5668. MEZ, CARL. Additamenta monographica 1920. Repert. Spec. Nov. Regni Veg. 17: 113-114. 1921.—In continuation of previous studies the following new species are described: *Nidularium citrinum*, Brazil; *Billbergia venezuelana*, Venezuela; and *Pitcairnia orchidifolia* Venezuela.—J. M. Greenman.

5669. MEZ, CARL. Gramineae novae vel minus cognitae I, II, III, IV, V. Repert. Spec. Nov. Regni Veg. 17: 83-86, 145-153, 204-214, 291-303. 1921; 18: 1-4. 1922.—This series of articles includes new species and combinations of which Mez is the author unless otherwise indicated. The species and the tribes to which they belong are as follows: (1) Paniceae. *Oplismenus Hildebrandtii*, Madagascar, *Panicum heteroneuron*, Australia; (2) Arundinelleae by MARG. JANOWSKI and CARL MEZ. *Arundinella Hildebrandtii*, Madagascar, *A. decempedalis* Jan. (*Panicum decempedale* O. Ktze.), *A. procumbens* Jan., Celebes, *A. decomposita* Jan., India, *A. stricta* Jan. (*P. strictum* Roxb.) *A. virgata* Jan., southern China, *A. glauca* Jan., Mexico, *A. Berteroniana* (*Trichochloa Berteroniana* Schult.), *A. filiformis* Jan., Philippine Islands, *A. caespitosa* Jan., Formosa, *Thyrsanolaena Mezii* Jan., southern China, *Garnotia*

barbulata Jan. (*Miquelia barbulata* Nees), *G. tenella* Jan. (*Berghausia tenella* Arn.), *G. pallens* Jan. (*B. pallens* Arn.), *G. Emodi* Jan. (*Miquelia Emodii* Arn. & Nees), *G. africana* Jan., Lac Fittri, western Africa, *G. mutica* Jan. (*Berghausia mutica* Munro), *G. elata* Jan. (*B. elata* Arn.), *G. Mezii* Jan., New Guinea; (3) *Zoysia* *pauciflora*, New Zealand, *Z. serrulata*, Hainan, China, *Z. koreana*, Korea; (4) *Stipeae*. *Aristida hypomegas*, New Mexico, *A. plica-polonica*, West Africa, *A. tenuisetulosa*, Philippine Islands, *A. Engleri*, southwestern Africa, *A. flocciculatus*, South Africa, *A. dasydesmis*, South Africa, *A. clymoides*, southwestern Africa, *A. subarticulata*, Argentina, *A. Sellowii*, Brazil, *A. achalensis*, Argentina, *A. Schultzii*, Australia, *A. Warburgii*, Australia, *A. textilis*, East Africa, *A. Lommeli*, East Africa, *A. kordofana* Kordofan, Africa, *A. endomelas*, Paraguay, *A. Niederleinii*, Argentina, *A. Pflanzii*, Bolivia, *A. tarapotana*, Peru, *A. debilis*, Venezuela, *A. mistonum*, Argentina, *A. rosacea*, Argentina, *A. breviglumis*, Costa Rica, *A. damarensis*, Damaraland, *A. coma-ardeae*, Damaraland, *A. Schäferi*, southwestern Africa, *A. lanipes*, southwestern Africa, *A. Hermannii*, southwestern Africa, *Stipa Kurtzii*, Argentina, *S. appendiculata*, Australia, *S. annua*, Peru, *S. nidulans*, Argentina, *S. lineolata*, Argentina, *S. pumila*, Bolivia, *S. verruculosa*, Argentina, *S. tulcanensis*, Ecuador, *S. Pflanzii*, Bolivia, *S. airoides*, Argentina, *S. rugulosa*, Australia, *S. Brandisii*, western Himalaya, *S. Roylei* (*Orthoraphium Roylei* Nees), *S. tibetica*, western Tibet, *S. Schlagintweitii*, Tibet, *S. retorta* (*Ortachne retorta* Nees), *S. diminuta*, East Africa, *S. cordobensis*, Argentina, *S. flexibarbata*, Argentina, *S. debilis*, Argentina, *S. mormonum*, Utah, U. S. A., *S. Dielsii*, West Australia, *S. effusa*, southwestern Persia, *Oryzopsis asiatica*, Altai, *Milium Kochii*, Armenia, *Piptatherum sinense*, China, *P. gracile*, western Tibet, *P. barbellatum*, Afganistan, *P. Munroi* (*Oryzopsis Munroi* Stapf), *Amphipogon pinifolius* New South Wales, *Lycurus Schaffneri* (*Mühlenbergia Schaffneri* Fourn.), *Epicampes minutiflora*, Mexico, *E. Ehrenbergii*, Mexico, *Mühlenbergia carinata*, Mexico, *M. coerulea* (*Epicampes coerulea* Griseb.), *M. coloradensis*, Colorado, U. S. A., *M. flabellata*, Costa Rica, *M. glauca* (*Podosaemum glaucum* Nees), *M. Purpusii*, Mexico, *M. Wallisii*, Sierra Nevada de Sta. Martha, Colombia; (5) *Phalarideae*. *Anthoxanthum Hookeri* (*Ataxia Hookeri* Griseb.), *A. gracillimum* (*Hierochloe gracillima* Hook. f.), *A. Horsfieldii* (*Ataxia Horsfieldii* Kth.), *A. Neesii*, Java, *A. tenue* (*Ataxia tenuis* Trin.), *A. mexicanum* (*Ataxia mexicana* Rupr.), *Hierochloe monticola*, Australia, *Microclaela acuminata* (*Tetrarhena acuminata* R. Br.), *M. diarrhena* (*Ehrharta diarrhena* F. v. Muel.), *M. Colensoi* (*E. Colensoi* Hook. f.), *Ehrharta filiformis* (*E. aphylla* var. *filiformis* Nees), *E. diffusa*, southwestern Africa; (6) *Phleae*. *Crypsis setulosa* (*Vilfa setulosa* Trin.), *C. ciliata*, Persia, *C. minuartioides* (*Torgesia minuartioides* Bornm.), *Phleum cornutum*, Mysia, *P. himalaicum*, Afghanistan, *Cornucopiae involucreatum* (*Alopecurus involucreatum* Post); (7) *Agrostideae*. *Sporobolus Eichingeri*, East Africa, *S. Seineri* southwestern Africa, *S. inordinatus*, Cuba, *S. infirmus* West Africa, *S. Schaffneri*, Mexico, *S. linearis*, Isle of France, *S. pectinellus*, West Africa, *S. salsus*, southwestern Africa, *S. glaucus*, southwestern Africa, *S. Ledermanni*, Kamerun, *S. Hildebrandtii*, Madagascar, *S. Braunii*, East Africa, *S. Stolzii*, East Africa, *S. granularis*, West Africa, *S. Dinklagei*, Liberia, *S. violascens*, India, *S. oxylophus* East Africa, *S. regularis*, Kamerun, *S. namensis*, north-central Africa, *S. Caroli*, Australia, *Diachrydium rigens* (*Vilfa rigens* Trin.), *Agrostis Kuntzei*, Chile, *A. crinum-ursi*, Island of Tristan D'Acunha, *A. shensiiana*, China, *A. pleiophylla*, Himalaya, *A. thyrsgera*, Mexico, *A. durangensis*, Mexico, *A. australiensis*, Australia, *A. platyphylla*, India, *A. mikioides*, China, *A. celebica*, Celebes, and *A. sumatrana*, Sumatra, *A. boliviana*, Bolivia, *A. Weberbaueri*, Peru, *A. papposa*, Cape of Good Hope, *A. kilimandscharica*, Kilimandscharo, *A. radula*, East Africa, *A. albimontana*, Cape of Good Hope, *A. Speeiana*, Chile, *A. Hoffmanni*, Costa Rica, *A. venezuelana*, Venezuela, *A. turrialbae*, Costa Rica, and *A. divaricatissima*, Korea.—J. M. Greenman.

5670. MUNZ, PHILIP A., AND IVAN M. JOHNSTON. Miscellaneous notes on the plants of Southern California—IV. Bull. Torrey Bot. Club 52: 221-223. 1925.—*Scirpus bernardinus*, *Alnus rhombifolia* var. *bernardina*, *Malvastrum gabrielense*, *Ammoselinum occidentale*, *Pentstemon Peirsoni*, and *Taraxacum californicum* are described as new. Evidence is presented to show that *Chrysopsis Wrightii* Gray is a synonym of *C. Brewerii* Gray.—Author.

5671. NOVAK, FRANT A. A new violet of the environs of Bratislava. (V. odorata var. *pumbiscapa* n. var.) Acta Bot. Bohemica 1: 35-36. 1922.

5672. PAX, F. *Beiträge zur Flora von China und Ost-Tibet. I.* [Contributions to the flora of China and eastern Tibet. I.] *Repert. Spec. Nov. Regni Veg.* 17: 93-99. 1921.—The present article consists of descriptions by F. PAX and K. HOFFMANN of the following new species and varieties: *Primula parvula*, *P. lanata*, *P. pseudopetiolaris*, *P. saxatilis* Komarov var. *pubescens*, *P. petiolaris* Wall. var. *setschwanica*, *P. Limprichtii*, *P. humilis*, *P. Riae*, *P. rupestris*, *P. petrocharis*, *P. crocifolia*, *P. kanseana*, *P. sulphurea*, *P. graminifolia*, *P. lancifolia*, *P. ionantha*, *P. longipetiolata*, *P. silenantha*, *P. laciniata*, and *P. ochracea*.—*J. M. Greenman.*

5673. PAX, F. *Euphorbiaceae americanae novae. I.* *Repert. Spec. Nov. Regni Veg.* 19: 174-177. 1923.—The following new species are described by Pax and K. Hoffmann: *Phyllanthus spartioides*, Brazil; *Euphorbia corssudenis*, Brazil; *Pedilanthus Millspaughii*, Costa Rica; *Croton rhamnifolioides*, Brazil; *C. Radlkoferi*, Brazil; *C. Lützelburgii*, Brazil; *C. glandulosodentatus*, Brazil; *C. Zehntneri*, Brazil; *Julocroton agrestis*, Brazil; and *J. trichophilus*, Brazil.—*Robert Woodson.*

5674. PAX, F., UND W. LIMPRICHT. *Beiträge zur Flora von China und Ost Tibet.* [Contributions to the flora of China and eastern Tibet.] *Repert. Spec. Nov. Regni Veg.* 17: 193-197. 1921.—Descriptions of the following new species are included: *Androsace elatior* Pax & K. Hoffm., *A. Limprichtii* Pax & K. Hoffm., *A. aizoon* Duby var. *rosea* Pax & K. Hoffm., *A. densa*, *A. chamaejasme* Host var. *trichophila* Pax & K. Hoffm., *Lysimachia brunelloides* Pax & K. Hoffm., *L. Limprichtii* Pax & K. Hoffm., *L. ovalifolia* Pax & K. Hoffm., *Rhododendron Limprichtii* Diels, *R. asterochnoum* Diels, *R. leucolasium* Diels, *R. petrocharis* Diels, *Meconopsis lancifolia* Franch. var. *solitariiflora* Fedde, and *M. punicea* Maxim. var. *Limprichtii* Fedde.—*J. M. Greenman.*

5675. PFEIFFER, H. *Cariceae Brasilienses maxime e civitate Paraná a. P. Dusén reportatae.* *Repert. Spec. Nov. Regni Veg.* 17: 28-32. 1921.—Forty-four species, varieties and forms of *Uncinia* and *Carex* are listed, including the following which are described as new to science: *Carex Feddeana*, *C. decida* Boott var. *caespitosa*, *C. gynaeandra*, and *C. sphaerogyna* Bak. var. *brasiliensis*.—*J. M. Greenman.*

5676. PFEIFFER, H. *Conspectus Cyperacearum in America meridionali nascentium. III.* *Repert. Spec. Nov. Regni Veg.* 19: 294-296. 1924.—The following new species are described and new combination made: *Pleurostachys Luetzelburgiana*, Brazil; *P. latifolia*, Brazil; *P. turbinata* (*Nemochloa turbinata* Nees, *P. tenuiflora* Kth., not Brongn., *P. Kunthiana* C. B. Clark); and *P. Arrojadii*, Brazil.—*Robert Woodson.*

5677. PILGER, R. *Agrostis Schneideri*, *A. taliensis*, *Danthonia Schneideri* spec. nov. aus China. *Repert. Spec. Nov. Regni Veg.* 17: 130-131. 1921.—These 3 new species are described from specimens collected in the province of Yunnan, China.—*J. M. Greenman.*

5678. PILGER, R. *Beiträge zur Kenntnis der Gattung Plantago. III.* [Contributions to knowledge of the genus *Plantago*. III.] *Repert. Spec. Nov. Regni Veg.* 19: 114-119. 1923.—The following new species are fully described: *Plantago Grayana*, Kauai; *P. hawaiiensis* (Gray) and var. *laxa*, Hawaii; *P. Hillebrandii*, Maui; and *P. glabrifolia* (*P. pachyphylla* var. *glabrifolia* Rock).—*Robert Woodson.*

5679. PILGER, R. *Eine neue Ipomoea (I. Amparoana) aus Costa Rica.* [A new *Ipomoea* from Costa Rica.] *Repert. Spec. Nov. Regni Veg.* 17: 125. 1921.—This new species is described from plants collected in the garden of Mrs. Amparo de Zeledon of San José.—*J. M. Greenman.*

5680. PILGER, R. *Polygonum Alfredi* spec. nov. aus Süd-Brasilien. [*Polygonum Alfredi* n. sp. from southern Brazil.] *Repert. Spec. Nov. Regni Veg.* 17: 126. 1921.—This new species is based on Bornmüller No. 408 from Rio Grande do Sul.—*J. M. Greenman.*

5681. PILGER, R. *Ueber einige Gramineae der Skottsbergschen Sammlung von Juan Fernandez.* [Some grasses of the Skottsberg collection from Juan Fernandez.] *Repert. Spec. Nov. Regni Veg.* 16: 385-388. 1920.—The following new species are described in detail: *Bromus masafueranus* Skottsb. & Pilger, *Polypogon chilensis* (*Chaetotropis chilensis* Kunth), *P. imberbis* (*Novodvorskya imberbis* Phil.), and *Agrostis masafuerana*.—*Robert Woodson.*

5682. RIDLEY, H. N. *New Euphorbiaceae from the Malay peninsula.* *Kew Bull.* 1923: 360-369. 1923.—The monotypic genus *Actephilopsis* is proposed as new. The new species

are: *Cleistanthus albidiscus*, Telok Hudang, Terutau Island; *Actephila aurantiaca*, Kelatin River; *Actephilopsis malayana*, Kwala Tembeling, Pahang; *Andrachne calcarea*, top of the Batu Caves, Selangor; *A. hirta*, near Kanga, Tebing Tinggi, Perlis; *Phyllanthus campanulatus*, Kedah Peak; *P. erythrocarpus*, Batu Caves, Selangor; *P. Hullettii*, summit of Mount Ophir, Malacca; *Glochidion glaberrimum*, Kanga, Perlis; *G. pedunculatum*, Bukit Timah, Singapore; *G. stylosum*, Semangkok Pass, Selangor; *G. trilobum*, Singapore; *Drypetes pendula*, Singapore; *D. riparia*, Jeram Panjang, Kelantan; *Antidesma hirtellum*, Bujong Malacca, Perak; *Croton calcicola*, Kanching, Selangor; *Trigonostemon salicifolius*, Kanching, Selangor; *Macaranga quadricornis*, Semangkok Pass, Bukit Telega, Selangor; *M. robiginosa*; *Cephalomappa penangensis*, Penang; *Tragia laevis*, Dayong Bunting, Lankawi Islands; and *Cnesmone subpeltata*, Batu Caves, Selangor.—*T. J. Fitzpatrick*.

5683. RILEY, L. A. M. Contributions to the flora of Sinaloa: IV. Kew Bull. 1923: 388-401. 1923.—This contribution is devoted to Leguminosae. About 86 species are annotated. The following new species is proposed: *Inga oophylla*, from El Bosque, San Ignacio, Sinaloa; and *Acacia cymbispina* Sprague & Riley from Guayams, Sonora, is given as a new name instead of *A. campeacheana*.—*T. J. Fitzpatrick*.

5684. RILEY, L. A. M. Contributions to the flora of Sinaloa: V. Kew Bull. 1924: 206-222. 1924.—The following species are described as new: *Hydrangea Seemannii*, Sierra Madre; *Phyllonoma coriacea*, Sierra Madre; and *Cuphea scelopetala*, San Ignacio. *Lopezia pauciflora* Sprague & Riley and *L. tepicana* Sprague & Riley are treated, at length. All the species listed from Rosaceae to Umbelliferae inclusive are well annotated, many copiously.—*T. J. Fitzpatrick*.

5685. RILEY, L. A. M. Further notes on *Ouratea*. Kew Bull. 1924: 363-365. 1924.—The new species described are: *Ouratea madrensis* from Sierra Madre, Guerrero, Mexico, and *O. podocarpa* Sprague & Riley from Penonome, Panama.—*T. J. Fitzpatrick*.

5686. ROSE, J. N. *Echeveria Whitei*. *Addisonia* 10: 47-48. Pl. 344 (col.). 1925.—A low, ornamental herb, of the family Crassulaceae, here delimited and proposed as new. It was collected in 1922 by Orland E. White at Quime, Bolivia. The genus has about 60 species, mostly natives of Mexico, one extending as far north as the U. S. A., but Bolivia is the southern limit of the genus.—*T. J. Fitzpatrick*.

5687. RUSBY, H. H. *Chomelia*, Jacquin and *Anisomeris*, Presl. Bull. Torrey Bot. Club 52: 137-142. Fig. 1-2. 1925.—A discussion is given of the history, characters, and species of the 2 genera. *Chomelia Purpusii* (Brandege), *Anisomeris Martiana* (Muell-Arg.), *A. ribesoides* (Muell-Arg.), *A. polyantha* (Blake), *A. brachyloba* (Standley), and *A. boliviana* (Standley) are published as new combinations; and *Chomelia longicaudata*, *C. brevicornu*, *C. dimorpha*, and *C. multiflora* as new species.—*P. A. Munz*.

5688. ST. JOHN, HAROLD. A critical consideration of Hagström's work on *Potamogeton*. Bull. Torrey Bot. Club 52: 461-471. Fig. 1. 1925.—In reviewing Hagström's "Critical Researches on the Potamogetons" (Kungl. Svenska Vetenskapsakademiens Handlingar 55: 1-281. Fig. 1-119. 1916), the resemblances to and divergencies from previous monographs are pointed out and the treatment of North American species is particularly scrutinized. A list is given of the plants described as new and especial attention is paid to Hagström's hybrids and to his tests of hybridity, which have not given convincing results.—*P. A. Munz*.

5689. SCHINZ, HANS Beiträge zur Kenntnis der afrikanischen Flora (XXXI). [Contributions to a knowledge of the African flora XXXI.] [With contributions by FR. KRÄNZLIN, J. BÄR, ALBERT THELLUNG, AND HANS SCHINZ.] Vierteljahrsschr. Naturf. Ges. Zürich 68: 420-456. 1923.—Orchidaceae, by Fr. Kränzlin. The following species are described as new: *Eulophia amblypetala*, *Polystachya Schinziana*, *P. vulcanica*, *Megaclinium hebetatum*, and *Listrostachys tenerrima*.—Observations on *Pavonia clathrata* Masters, *P. Rehmannii* Szyszyl., and *P. commutata* Conrath are recorded by Schinz.—Rubiaceae, by Hans Schinz and J. Bär. The new species, varieties and combinations are: *Oldenlandia amboensis* Schinz, *O. natalensis* (Hochst.) var. *hirsuta* Bär, *O. neglecta* Schinz, *O. rufescens* Schinz, *O. xerophila* Schinz, *Houstonia trichotoma* Bär, (*Oldenlandia trichotoma* Schinz) *Pen'as transvaalensis* Bär, *Otiophora hirsuta* Bär., *O. densiflora* Bär., *Pentanisia prunelloides* Schinz, (*Declieuxia prunelloides* Klotzsch) *P. prunelloides* var. *longifolia* Bär, *Galopina crocylloides* Bär, and *Borreria squarrosa* Schinz.—Umbelliferae and Compositae, by Albert Thellung. The new species, etc., are:

Pituranthos scoparius var. *rubellus*, *Vernonia pseudo-corymbosa*, *Blumea Kelleri*, *B. somaliensis*, *Nicolasia quinqueseta* O. Hoffm., *N. costata* (*Nolettia costata* Klatt), *Phymaspermum equisetoides*, *Senecio pseudo-rhyncholaenus*, vars. *exauriculatus* and *auriculatus*, *Dimorphotheca pseud-aurantiaca* Schinz & Thell., *D. flaccida* (*Calendula flaccida* Vent.), *D. pluvisalis* \times *pseud-aurantiaca* = \times *D. turicensis*, *Gerbera ambigua* (Cass.) Sch. Bip. vars. *typica*, *Kraussii* (Sch. Bip.), *Gueinzii* (Harvey), and *cardiobasis*, *G. glandulosa*, *G. Conrathii*, *Asteriscus graveolens* (Forsk.) DC. vars. *genuinus*, *villosus*, and *scaber*.—John H. Schaffner.

5690. SCHINZ, HANS, UND ALBERT THELLUNG. Weitere Beiträge zur Nomenklatur der Schweizerflora (VIII.). [Further contributions to the nomenclature of the Swiss flora. VIII.] (Beiträge zur Kenntnis der Schweizerflora XIX.) Vierteljahrsschr. Naturf. Ges. Zürich 68: 457-476. 1923.—A discussion is given of the scientific names of various Swiss plants, with a number of new combinations. The new combinations are: *Silene vulgaris* (Mönch) Garcke subsp. *prostrata* (Gaudin), *Heliosperma quadridentatum* (Murray), *Phyteuma Scheuchzeri* All. subsp. *Scheuchzeri* (Gaudin) Becherer, *P. Scheuchzeri* All. subsp. *Columnæ* (Gaudin) Becherer, *Taraxacum officinale* Weber subsp. *officinale* (Gaudin) Becherer, and *T. officinale* Weber subsp. *palustre* (Lyons) Becherer.—John H. Schaffner.

5691. SCHLECHTER, R. Additamenta ad Orchideologiam Chinensem I, II. Repert. Spec. Nov. Regni Veg. 17: 22-28, 63-72. 1921.—The following species are described as new to science: *Orchis Tenii*, *O. unifoliata*, *Amitostigma microhemipilia*, *A. yunnanense*, *Neottinthe Mairei*, *Platanthera lancilabris*, *Habenaria chrysantha*, *H. kweitschuensis*, *H. Loloorum*, *H. Tenii*, *Satyrium pycnostachyum*, *S. Tenii*, *Epipactis Tenii*, *Goodyera Mairei*, *Cheirostylis Josephi*, *Liparis Tenii*, *Dendrobium ctenoglossum*, *D. Henryi*, *D. tibeticum*, *Oreorchis yunnanensis*, *Pachystoma brevilabium*, *Geodorum Esquirolei*, *G. euphloides*, *Vanda Esquirolei*, and *V. Henryi*.—J. M. Greenman.

5692. SCHLECHTER, R. Basiphyllaea Schltr., eine verkannte westindische Orchidacee. [Basiphyllaea Schltr., a misunderstood West Indian orchid.] Repert. Spec. Nov. Regni Veg. 17: 76-78. 1921.—The author proposes the new generic name *Basiphyllaea* for a previously misunderstood or little known orchid. One species only is known, namely, *B. sarcophylla* (*Bletia sarcophylla* Rehb. f.) from Cuba.—J. M. Greenman.

5693. SCHLECHTER, R. Beiträge zur Kenntnis der Orchidaceenflora von Parana. [Contributions to the knowledge of the orchid-flora of Parana.] Repert. Spec. Nov. Regni Veg. 16: 247-254. 1919; 316-334. 1920.—An extensive list of orchids from Parana, Brazil, is compiled, with notes, and the following new species are described and new combinations made: *Habenaria sartoroides*, *H. sceptrum*, *H. nana*, *H. Dusenii*, *H. tamanduensis*, *H. polygonoides*, *H. heterophylla*, *H. heleogena*; *Pogonia magnifica*, *P. humidicola*, *P. calantha*, *P. paranaensis* Rodr. var. *major*; *Prescottia truncicola*; *Baskervillea paranaensis* (*Ponthieva paranaensis* Kränzl.); *Brachystele atramentaria* (*Spiranthes atramentaria* Kränzl.); *Cyclopogon asphyllus*, *C. micranthus* (*Spiranthes itatiaensis* Kränzl.), *C. diversifolius* (*Spiranthes diversifolius* Cogn.), *C. Langei*, *C. Dusenii*; *Pelexia hypnophila* (*Spiranthes hypnophila* Rodr.), *P. orobanchoides* (*Stenorchynchus orobanchoides* Kränzl.), *P. tamanduensis* (*S. tamanduensis* Kränzl.), *P. tenuior*, *P. robusta* (*S. robustus* Kränzl.), *P. dolichorhiza*, *P. hysterantha* (*Spiranthes hysterantha* Rodr.); *Sarcoglottis neuroptera* (*Spiranthes neuroptera* Rehb. f. & Warm., *S. Lindmanniana* Kränzl.); *Trachelosiphon paranaense*; *Physurus bidentiferus*, *P. paranaensis* (*Wulfschlaegelia paranaensis* Kränzl.); *Microstylis paranaensis*, *M. ovalilabia*; *Galeandra paranaensis*; *Cyanaeorchis minor*; *Cyrtopodium paranaense*, and *C. Dusenii*.—Robert Woodson.

5694. SCHLECHTER, R. Corybas Salisb. oder Corysanthes R. Br.? [Corybas Salisb. or Corysanthes R. Br.?] Repert. Spec. Nov. Regni Veg. 19: 18-24. 1923.—After a discussion of this question, the author decides in favor of *Corybas* Salisb. and makes the following new combinations: *Corybas himalaicus* (*Corysanthes himalaica* King & Pantl.), India; *C. bancanus* (*Corysanthes bancana* J. J. Sm.), Malay Peninsula.; *C. carinatus* (*Corysanthes carinata* J. J. Sm.), Java; *C. imperatorius* (*Corysanthes imperatoria* J. J. Sm.), Java; *C. mucronatus* (*Corysanthes mucronata* Bl.), Java; *C. Ridleyanus* (*Corysanthes picta* Ridl., not Lindl.), Java; *C. sumatranus* (*Corysanthes sumatrana* J. J. Sm.), Sumatra; *C. vinosus* (*Corysanthes vinosa* J. J. Sm.), Java; *C. muscicolus* (*Corysanthes muscicola* Schltr.), Celebes; *C. moluccanus* (*Corysanthes moluccana* Schltr.), Banda; *C. aduncus* (*Corysanthes adunca* Schltr.), German New Guinea;

C. arachnoideus (*Corysanthes arachnoidea* Schltr.), German New Guinea; *C. arfakensis* (*Corysanthes arfakensis* J. J. Sm.), Dutch New Guinea; *C. aristatus* (*Corysanthes aristata* Schltr.), German New Guinea; *C. calliferus* (*Corysanthes callifera* J. J. Sm.), Dutch New Guinea; *C. calophyllus* (*Corysanthes calophylla* Schltr.), German New Guinea; *C. epiphyticus* (*Corysanthes epiphytica* J. J. Sm.), Dutch New Guinea; *C. gastrosiphon* (*Corysanthes gastrosiphon* Schltr.), German New Guinea; *C. gibbiferus* (*Corysanthes gibbifera* Schltr.), German New Guinea; *C. Klossii* (*Corysanthes Klossii* Ridl.), Dutch New Guinea; *C. leucotyle* (*Corysanthes leucotyle* Schltr.), German New Guinea; *C. Ledermannii* (*Corysanthes Ledermannii* Schltr.), German New Guinea; *C. longipetalus* (*Corysanthes longipetala* Ridl.), Dutch New Guinea; *C. paleariferus* (*Corysanthes palearifera* J. J. Sm.), Dutch New Guinea; *C. puberulus* (*Corysanthes puberula* Schltr.), German New Guinea; *C. saprophyticus* (*Corysanthes saprophytica* Schltr.), German New Guinea; *C. Smithianus* (*Corysanthes triloba* J. J. Sm.), Dutch New Guinea; *C. speculum* (*Corysanthes speculum* Schltr.), German New Guinea; *C. striatus* (*Corysanthes striata* Schltr.), German New Guinea; *C. torricellensis* (*Corysanthes torricellensis* Schltr.), German New Guinea; *C. umbonatus* (*Corysanthes umbonata* Schltr.), German New Guinea; *C. ventricosus* (*Corysanthes ventricosa* J. J. Sm.), Dutch New Guinea; *C. Betschei* (*Corysanthes Betschei* F. v. Muell.), Samoa; *C. minutus* (*Corysanthes minuta* Schltr., *Liparis minuta* Drake), Tahiti; *C. mirabilis* (*Corysanthes mirabilis* Schltr.), New Hebrides; *C. neo-caledonicus* (*Corysanthes neo-caledonica* Schltr.), New Caledonia; and *C. Matthewsii* (*Corysanthes Matthewsii* Cheesem.), New Zealand.—Robert Woodson.

5695. SCHLECHTER, R. *Dichrotrichum borneense* Schltr., spec. nov., als Vertreter einer neuen Sektion der Gattung. [*Dichrotrichum borneense* Schltr., n. sp., as a representative for a new section of the genus.] Repert. Spec. Nov. Regni Veg. 16: 212-213. 1919.—A suggestion for a new section (*Agamylopsis*) of the genus is made, and the new species, *Dichrotrichum borneense*, from Borneo, is described.—Robert Woodson.

5696. SCHLECHTER, R. Die Gattung *Fernandezia* Ruiz et Pav. [The genus *Fernandezia* Ruiz & Pav.] Repert. Spec. Nov. Regni Veg. 16: 345-349. 1920.—Difficulties in the genus *Fernandezia* Ruiz & Pav., as well as in other genera of orchids, are thoroughly discussed. The following new combinations in *Fernandezia* by the author are included: *Fernandezia disticha* (*Centropetalum distichum* Ldl.), *F. Warscewiczii* (*C. Warscewiczii* Rehb. f.) and *F. ionanthera* (*Nasonia ionanthera* Rehb. f. & Warsc.)—Robert Woodson.

5697. SCHLECHTER, R. *Drakaea* Ldl. und *Spiculaea* Ldl. Repert. Spec. Nov. Regni Veg. 17: 78-83. 1921.—The author reviews the history of *Drakaea* and *Spiculaea* of Lindley, recognizes them as valid genera, and refers 3 species to each genus. The following are either new species or new combinations: *Drakaea Fitzgerladii* (*D. elastica* Fitzg., not Lindl.) of Western Australia, *Spiculaea irritabilis* (*Arthrochilus irritabilis* F. v. M.), and *S. Huntiana* (*Drakaea Huntiana* F. v. M.).—J. M. Greenman.

5698. SCHLECHTER, R. *Orchidaceae novae et criticae*. LVIII-LX. Repert. Spec. Nov. Regni Veg. 16: 42-47, 103-131, 214-219. 1919; *IBID.* 353-358, 437-450. 1920.—The following new orchids are described, from German New Guinea (Kaiser Wilhelm's Land) unless otherwise noted: *Corysanthes carinulifera*; *Cryptostylis concava*; *Vrydagzenia Guppyi*, Salomon Is.; *Microstylis euantha*; *Coelogyne oligantha*; *Dendrobium brachyaeron*; *D. dicerus*; *Ceratostylis minutiflora*, British Papua; *Glomera oligantha*; *Pedilochilus brachiatus*; *Cryptostylis gracilis*; *C. hamadryas*; *C. sororia*; *Papuaea* n. gen., *P. reticulata*; *Hetaeria Baeuerlenii*, Brit. Papua; *Vrydagzenia Chalmersii*, Brit. Papua; *Tropida corymbioides*; *Microstylis graciliscapa*; *M. intergrilabium*, Brit. Papua; *M. Kempfi*; *Oberonia Kempteri*; *O. lancipetala*; *Liparis Kempfi*; *Cadetia bicornuta*; *Dendrobium cultrifolium*; *D. geminiflorum*; *D. gracilicolle*; *D. incurvilabium*; *D. pityphyllum*; *D. raphiotes*; *D. prorepens*; *Eria brachybotrya*; *E. singulifolia*; *E. stenobulba*; *Mediocalcar brachygenium*; *M. rigidulum*; *Ischnocentrum selaginelloides*; *Podochilus bilobulatus*; *Appendicula bracteata*; *Pedilochilus angustifolius*; *Bulbophyllum asperilingue*; *B. blepharadenium*; *B. cylindrocarpum*; *B. eublepharum*; *B. lonchophyllum*; *B. Louisiadem*, Louisiade; *B. mystrophyllum*; *B. nephropetalum*; *B. pachyglossum*, *B. parvilabium*; *B. squamipetalum*; *Phreatria Kempfi*; *P. Kempteri*; *P. Micholitzii*, Brit. Papua; *P. micrantha*; *P. pleistantha*; *Thrixspermum oenoides*; *Microlaorchis laxa*; *Taeniophyllum plei torhizum*; *T. setipes*; *Ceratostylis Keysseri*; *Mediocalcar brevisaccatum*; *Epiblastus angustifolius*; *Giulia-*

nettia Keysseri; *Cadetia Foersteriana*; *Dendrobium Keysseri*; *D. saruwagedicum*; *Eria heplostachys*; *Bulbophyllum bolaninum*; *Phreatia Keysseri*; *Habenaria amambayensis*, Paraguay; *H. Deistellii*, Java; *H. recta*, Brazil; *H. Schindleri*, China; *Disa Chiovendae* (*D. vaginata* Chiov., not Harv.), Abyssinia; *Neottia papilligera*, Japan; *Nervilia abyssinica* (*Pogonia abyssinica* Chiov.), Abyssinia; *Prescottia panamensis*, Panama; *P. polysphaera*, Brazil; *Aa achalensis*, Argentina; *A. Hieronymi* (*Allensteinia Hieronymi* Cogn.), Argentina; *A. Lorentzii* (*Allensteinia Hieronymi* Cogn.), Argentina; *A. Schickendanzii* (*Allensteinia Hieronymi* Cogn.), Argentina; *Ponthieva Hassleri*, Paraguay; *Physurus argyrostictus*, Guatemala; *Neobartlettia* n. gen., *N. guianensis*, Brit. Guiana; *N. sobralioides* (*Palmorchis sobralioides* Rodr.), Brazil; *Stelis crescenticola*, Panama; *Isophilus Langlassei*, Mexico; *Arpophyllum jamaicense*, Jamaica; *Epidendrium Hoffmannii*, Costa Rica; *E. Johannis*, Guatemala; *E. Magelhaesii*, Brazil; *Warrea costaricensis*, Costa Rica; *Dipodium carinatum*, New Hebrides; *Eriopsis Wercklei*, Costa Rica; *Lindleyella bicornaria* (*Bifrenaria bicornaria* Rehb. f., *Bifrenaria aurantiaca* Ldl.), North Brazil, Guiana, and W. I.; *Camaridium Wrightii*, Nicaragua; *Oncidium Emilii*, Paraguay; *Zygostates Lindmannii* (*Dipteranthus Lindmannii* Kränzl.); *Z. daysrhiza* (*Ornithocephalus dasyrhizus* Kränzl.), Brazil; and *Phymatidium Herteri*, Brazil.—Robert Woodson.

5699. SCHLECHTER, R. *Orchidaceae novae et criticae*. Decas LXVIII, LXIX, LXX, LXXI-LXXIII. Repert. Spec. Nov. Regni Veg. 17: 12-18, 138-144, 267-272, 366-382. 1921.—The following new species are described: *Stenorhynchus foliosus* Brazil; *Microstylis Muellerei* and *M. Pabstii*, Brazil; *Endresiella* n. gen., *E. Zahlbruckneriana*, Costa Rica; *Chondrorhyncha Endresii* and *C. Reichenbachiana*, Costa Rica; *Oncidium hapalotyle* and *O. Sodiroi*, Ecuador, *O. psyche*, Brazil; *Ornithocephalus bryostachyus*, Ecuador; *Habenaria avicula*, Panama; *H. costaricensis*, Costa Rica; *H. Belloi*, H. Christiani, *H. flaccifolia*, and *H. Luetzelburgii*, Brazil; *Triphora Wagneri*, Panama; *Pleurothallis Johannis*, Guatemala; *P. panamensis* and *P. Wagneri*, Panama; *P. cearensis*, Brazil; *Polystachya guatemalensis*, Guatemala; *Epidendrum Radlkofarianum*, Panama; *Bulbophyllum Wagneri*, Panama; *Teliopogon Pfavii*, Costa Rica; *Prescottia stricta*, Brazil; *Pelexia Luetzelburgii* and *P. Mouraëi*, Brazil; *Centrogenium macrophyllum*, Brazil; *Laelia bahiensis*, Brazil; *Aphyllorchis exilis*, Kaiser-Wilhelms-Land; *Goodyera porphyrophylla*, Neu-Mecklenburg, G. Werner, Kaiser-Wilhelms-Land; *Moerenhoutia geluana*, Kaiser-Wilhelms-Land; *Eurycentrum amblyoceras*, British-Papua; *Vrydagzenia densa*, Kaiser-Wilhelms-Land; *Zeuxine macrorhyncha*, Kaiser-Wilhelms-Land; *Hetaeria goodyeroides*, Kaiser-Wilhelms-Land; *Oberonia Kempfii*, *O. microtatantha* and *O. Werner*, Kaiser-Wilhelms-Land; *Microstylis cyanobrachia*, *M. pubicallosa* M. Werner, Kaiser-Wilhelms-Land; *Dendrobium Adolphi*, *D. geluanum*, and *D. unifoliatum*, Kaiser-Wilhelms-Land, *D. Kennedyi*, British Papua; *Glomera calocephala*, Neu-Mecklenburg; *Appendicula Werner*, Kaiser-Wilhelms-Land; *Spathoglottis erectiflora*, Kaiser-Wilhelms-Land; *Bulbophyllum Adolphi*, *B. arcuatum*, *B. galactanthum*, *B. Kempfii*, *B. nasilabium*, *B. stenorhopalos* and *B. uroglossum*, Kaiser-Wilhelms-Land; *Phreatia spathilabia*, Kaiser-Wilhelms-Land; and *Luisia macrocarpa*, Kaiser-Wilhelms-Land.—J. M. Greenman.

5700. SCHLECHTER, R. *Orchidaceae novae et criticae*. LXXV-LXXVI. Repert. Spec. Nov. Regni Veg. 19: 372-383. 1924.—The following new combinations are made and new species described from China: *Orchis chrysea* (*Habenaria chrysea* W. W. Sm.), *O. crenulata*; *Herminium minutiflorum*; *Satyrion Tschangii*, *Epipactis nephrocordia*; *Bletilla scopulorum* (*Pleione scopulorum* W. W. Sm.); *Neottia Smithiana*; *N. Tenii*; *Hetaeria inverta* (*Zeuxine inverta* W. W. Sm.); *Zeuxine aurantiaca*; *Pleione Hui*; *Pholidota yunnanensis*; *Liparis ampliifolia*; *L. kwangtungensis*; *L. Tschangii*; *Podochilus chinensis*; *Bulbophyllum kwangtungense*; *B. Levinei*; *Acrides flavescens*; and *Sarcanthus unciiferus*.—Robert Woodson.

5701. SCHLECHTER, R. Studium zur Klärung der Gattung *Rodriguezia* Ruiz et Pav. [Study on the clarification of the genus *Rodriguezia* Ruiz & Pav.] Repert. Spec. Nov. Regni Veg. 16: 425-430. 1920.—From a study on the clarification of the genus *Rodriguezia* Ruiz & Pav. emerge 2 new genera with 3 new combinations in species as follows: *Rodriguezia* n. gen. of the Orchidaceae, *R. eleutherosepala* (*Rodriguezia eleutherosepala* Rodr.), *R. microphyton* (*Rodriguezia microphyton* Rodr.), Brazil; and *Hybochilus* n. gen. of the Orchidaceae, *H. inconspicuus* (*Rodriguezia inconspicua* Kränzl.), Costa Rica.—Robert Woodson.

5702. SCHLECHTER, R. Über zwei neue interessante Primeln aus China. [Two interesting new *Primulas* from China.] *Repert. Spec. Nov. Regni Veg.* 19: 383-385. 1924.—*Primula erodioides* and *P. Merrilliana* n. spp. are described.—Robert Woodson.

5703. SCHLECHTER, R. Zur Nomenklatur der Elaeocarpaceen-Gattung *Sericolea* Schltr. [The nomenclature of the genus *Sericolea* of the Elaeocarpaceae.] *Repert. Spec. Nov. Regni Veg.* 16: 29-32. 1919.—An account is given of the independent publication of 4 different generic names by as many authors from 1916 to 1918. Reduction of 3 of these names to *Sericolea* Schltr. is accomplished, full synonymy is given, and the following new combinations are made: *Sericolea gracilis* (*Hormopetalum gracile* Lauterb.), *S. Pullei* (*H. Pullei* Lauterb.), *S. Ridleyana* (*Mischopleura Ridleyana* Wernh.), and *S. Werneri* (*Hormopetalum Werneri* Lauterb.).—Robert Woodson.

5704. SMALL, JOHN K. A new bog-asphodel from the mountains. *Torreyia* 24: 86-87. 1924.—The type specimens of *Abama montana* n. sp. Small were collected near Flat Rock, North Carolina.—Wm. G. McGinnies.

5705. SPRAGUE, T. A., AND L. A. M. RILEY. Materials for a flora of British Honduras: I. *Kew Bull.* 1924: 1-20. 1924.—There is given a general account of British Honduras, followed by types of vegetation, as mangrove swamps, coastal savannahs, cohune-ridge, broken-ridge, and pine-ridge. There is a short account of previous botanical explorations and a list of works relating to the country. Eighty-seven species or forms are given with varying annotations. The new species are: *Hypericum terrae-firmae*, *Vismia Camparaguey*, *Sloanea eriostemon*, and *S. usurpatrix*.—T. J. Fitzpatrick.

5706. STOIANOFF, N., AND B. STEFANOFF. *Scabiosa rhodopensis*. *Kew Bull.* 1924: 98-101. 1 pl. 1924.—The author describes and delimits this new species from Bulgaria, and gives ecological conditions and plant societies where the species is found.—T. J. Fitzpatrick.

5707. THELLUNG, A. Ein neuer *Amarantus* aus dem andinen Südamerika. [A new *Amarantus* from Andean South America.] *Repert. Spec. Nov. Regni Veg.* 16: 23-24. 1919.—The following new species is described from Chile and Argentina: *Amarantus Ataco* (A. blitum Rob. E. Fries, not L.).—Robert Woodson.

5708. THELLUNG, A. *Scandicium*, ein neues Umbelliferen-Genus. [Scandicium, a new genus of Umbelliferae.] *Repert. Spec. Nov. Regni Veg.* 16: 15-22. 1919.—*Scandicium* is proposed as a new genus and the following species and varieties are described: *Scandicium stellatum* (*Scandix stellata* Solander) vars. *glabrum* Boiss., *genuinum* (*Scandix pinnatifida* α *genuina* Ledeb.), *velutinum* (*Scandix pinnatifida* var. *velutina* Cosson), *soongoricum* (*Scandix pinnatifida* β *soongorica* Schrenk), *hirsutum* (*Scandix pinnatifida* β *hirsutum* C. Koch), *hebecarpum*, *vulgare*, *leiocarpum*, *pinnatifidum* (*Scandix pinnatifida* Vent.), *radiiferum*, *decipiens* (*Scandix pinnatifida* β *decipiens* Bornmüller), *Aucheri* (*Scandix Aucheri* Boiss.). The species occurs in the Mediterranean and western Asiatic regions. *Scandix australis* L. f. *cyclotaxioides* is also described as a new form.—Robert Woodson.

5709. THODAY, D. *Passerina*: type specimens. *Kew Bull.* 1924: 387-389. 1924.—The author gives a list of 15 species, locating the type specimen for each. Notes are included also on 3 species recently considered.—T. J. Fitzpatrick.

5710. TURRILL, W. B. *Galium flavicans*. *Kew Bull.* 1924: 336. 1924.—The author collates the literature using this name. He concludes that it is apparently a mistake for *Galium flavescens*.—T. J. Fitzpatrick.

5711. TURRILL, W. B. *Macaranga* from Fiji. *Kew Bull.* 1924: 393. 1924.—*Macaranga magna* Turrill is substituted for *M. grandifolia* Turrill, not Merrill.—T. J. Fitzpatrick.

5712. TURRILL, W. B. On the flora of the Gallipoli Peninsula. *Kew Bull.* 1924: 305-331. 1924.—This contribution includes the species in the families Ranunculaceae to Lythraceae, inclusive. *Dianthus Ingoldbyi* is described as new, collected by Ingoldby at Anzac, in August, 1923. An amplified and modified description is given of *Astragalus Durhamii* Turrill.—T. J. Fitzpatrick.

5713. TURRILL, W. B. On the flora of the Gallipoli Peninsula. *Kew Bull.* 1924: 337-363. 1924.—A fully annotated list is given of the species in the families Umbelliferae to Labiatae, inclusive. *Asyneuma parviflora* of the Campanulaceae is described as new, also the variety *Cerinth minor* L. var. *hispida* of the Boraginaceae.—T. J. Fitzpatrick.

5714. TURRILL, W. B. On the flora of the Gallipoli Peninsula. Kew Bull. 1924: 369-383. 3 fig. 1924.—An annotated list is given of the species of the families Illecebraceae to Filices, inclusive. *Orchis tridentata* Scop. var. *chersonesensis* n. var. is described.—T. J. Fitzpatrick.

5715. URBAN, IGN. *Sertum antillanum*. VIII, IX. Repert. Spec. Nov. Regni Veg. 16: 32-41, 132-151. 1919.—A list of Antillean plants is compiled with the following new species: *Cissus Buchii*, Haiti; *Abutilon pubescens* (*Sida pubescens* Cav.), Spain; *A. trisulcatum* (*Sida trisulcata* Jacq.), Cuba; *Malvastrum corchorifolium* (*Malva corchorifolia* Desrouss.), Haiti; *Hibiscus brachypus*, Haiti; *Meleocactus intortus* (*Cactus intortus* Mill.), Haiti; *Opuntia Picardae*, Haiti; *Plumeria apiculata*, Jamaica; *Marsdenia troyana*, Jamaica; *Metalepis albiflora*, Tobago; *Gonolobus tobagensis*, Tobago; *Cuscuta domingensis*, Santo Domingo; *C. Boldinghii*, Curaçao; *Cordia tobagensis* and var. *Broadwayi*, Tobago; *Aegiphila oligoneura*, Jamaica; *Justicia culubritae*, Culubrita; *Piper Buchii*, Haiti; *Pilea selleana*, Haiti; *Phenax microcarpus*, Haiti; *Disciphania domingensis*, Haiti; *Hyperbaena ovata*, Cuba; *H. racemosa*, Cuba, *Dalbergia volubilis* (*Securidaca volubilis* L.), Cuba, Martinique, etc.; *Hieronyma domingensis*, Haiti; *H. jamaicensis*, Jamaica; *H. caribaea*, St. Vincent; *Sloanea domingensis*, Haiti; *Haitia* n. gen. of the Lythraceae, *H. Buchii*, Haiti; *Micromeria viminea* (*Satureja viminea* L.); *M. alpestris*, Santo Domingo; *Hyptis escobilla*, *H. Schusteri*, Haiti; *Oldenlandia selleana*, Haiti; *Vernonia Buchii*, Haiti; *Mikania polychaeta*, Haiti; *Erigeron semiovalis*, Cuba; *Sesbania emerus* (*Aeschynomene Emerus* Aubl.), Cuba; *Eugenia pomifera* (*Myrtus pomifera* Aubl.), Haiti; *Myrcia citrifolia* (*Myrtus citrifolia* Aubl.), *Anechites nerium* (*Apocynum Nerium* Aubl.), Cuba; and *Gonolobus scandens* (*Periploca scandens* Aubl.), Guadeloupe.—Robert Woodson.

5716. URBAN, I. *Sertum antillanum* X, XI, XII, XIII. Repert. Spec. Nov. Regni Veg. 17: 6-11, 49-54, 156-170, 402-408. 1921.—In continuation of the author's critical studies of the Antillean flora, important notes are recorded on *Ipomoea clausa* Rudolphi, *Rondeletia tomentosa* var.? *domingensis* P. DC., *Artemisia domingensis* Urb., *Pithecolobium oppositifolium* Urb., *Trichilia brachystachya* Klotzsch, *T. Moritzii* C. DC., *T. Halesia* Loeff., *T. moschata* Sw., *Episcia mimuloides* Benth., *Passiflora serrulata* Jacq., *Lonchocarpus Benthamianus* Pittier, *Miconia guianensis* (Aubl.) Cogn., *M. punctata* (Desv.) D. Don, *M. chrysophylla* (L. C. Rich.) Urb., and *Lobelia cirsiifolia* Lam. The following new species, varieties, and combinations are published: *Exostema nitens*, *Guettarda Fuertesii*, *Uragoga domingensis* with its varieties *barahonensis* and *Fuertesii*, *Penelopeia* n. gen. Cucurbitaceae, *P. suburceolata* (*Coccinea suburceolata* Cogn.), *Eupatorium selleanum*, *E. Fuertesii*, *E. Buchii*, *E. barahonense*, *E. pachyneurum*, *E. miragoanae*, *E. gibbosum*, *E. Gabbii*, *E. Jacquemontii*, *E. tapeinanthum*, *E. Picardae*, *E. Larcheanum*, *E. dolichopus*, *Aster heleius*, *Erigeron subalpinus*, *Pectis samanensis*, *P. Christii*, *Dendrophthora marmeladensis*, *Lonchocarpus caribaeus*, *Erythrina Buchii*, *Trichilia Cruegeriana*, *Graffenrieda barahonensis*, *Conostegia lomensis*, *Miconia pycnoneura*, *M. antiquensis*, *Tococa Broadwayi*, *Sicydium Dussii*, *Besleria longipes*, *Alcmene* n. gen. of the Anonaceae, *A. tobagensis*, *Xylosma guadalupense*, *Tournefortia guadalupensis*, *T. jamaicensis*, *Machaerium Berteronianum* (*Nissolia Berteroniana* Steud.), *Cryptorhiza* n. gen. of the Myrtaceae, *C. haitiensis*, *Conostegia icosandra* (*Melastoma icosandrum* Sw.), *Tetrazygia biflora* (*Calycogonium biflorum* Cogn.), *Miconia Blancheana*, *Ossaea Eggersiana* (*Leandra Eggersiana* Cogn.), *Phialanthus revolutus*, and *Senecio Buchii*.—J. M. Greenman.

5717. URBAN, IGN. *Sertum antillanum*. XVIII, XIX. Repert. Spec. Nov. Regni Veg. 19: 1-9. 1923; *IBID.* 298-308. 1924.—The following new genera, species, and varieties are described: *Commelina acutissima*, Santo Domingo; *Coccoloba neurophylla*, Haiti; *Arcoa* n. gen. of the Euphorbiaceae, *A. gonavensis*, Haiti; *Gossypiospermum* n. gen. of the Flacourtiaceae, *G. eriophorum* (*Casearia eriophora* Ch. Wright), Cuba; *Metastelma rupicolum*, Cuba; *Poecilopsis crispiflora*, Haiti; *Isidorea Leonardi*, Haiti; *Machaonia variifolia*, Cuba; *Baccharis myrsinites* (Lam.) Pers. var. *morricola*, Haiti; *Podocarpus Buchii*, Haiti; *Croton astrophorus*, Haiti; *Sarcomphalus obovatus*, Cuba; *Myrtus cainitoides*, Cuba; *Psidium araneosum*, Cuba; *Eugenia Serrei*, Cuba; *E. atricha*, Cuba; *Miconia cuabae*, Cuba; *Pachyanthus monopleurus*, Cuba; *Salvia haitiensis*, Haiti; and *Tabebuia dominicensis*, Santo Domingo.—Robert Woodson.

5718. VESTERGREN, T. En hybrid mellan *Agropyron repens* (L.) PB. och *Hordeum nodosum* L. [A hybrid between *Agropyron repens* (L.) PB. and *Hordeum nodosum* L.] *Svensk Bot. Tidskr.* 19: 412-418. 4 fig. 1925.—The author gives a detailed description of some specimens

of this hybrid in the Botanic Museum of Copenhagen. They are completely sterile.—O. Heilborn.

5719. WARBURG, O. Drei neue Arten der Gattung Sterculia. [Three new species of the genus Sterculia.] Repert. Spec. Nov. Regni Veg. 19: 121-122. 1923.—The following new species are described in detail: *Sterculia sangirensis*, Sangir Is.; *S. Forbesii*, Sumatra; and *Sterculia dactylocarpa*, Sangir Is.—Robert Woodson.

5720. WARBURG, OTTO. Plantae novae siamenses a J. Schmidt collectae. Repert. Spec. Nov. Regni Veg. 16: 254-256. 1919.—The following new species are fully described: *Knema siamensis*, *Gonocaryum siamense*, *Rauwolfia densiflora*, *Scolopia siamensis*, and *Picroxylon* n. gen. of the Simarubaceae with one species, *P. siamense*.—Robert Woodson.

5721. WARBURG, OTTO. Zwei neue Pflanzen aus den Liu-kiu-Inseln. [Two new plants from the Liu-kiu Islands.] Repert. Spec. Nov. Regni Veg. 16: 352. 1920.—The following species are fully described: *Isachne commelinifolia* and *Clematis liu-kiuensis*.—Robert Woodson.

5722. WILLIAMS, R. O. Bougainvilleaeas. Bull. Dept. Agric. Trinidad and Tobago. 20²⁻⁴: 120-122. 1922.—Three species, *Bougainvillea glabra*, *B. Sanderiana* and *B. spectabilis* are discussed. Two hybrid Bougainvilleaeas and 2 species uncommon in Trinidad are also given. Reports of the existence of a white-bracted species have not been confirmed by the writer.—Florence A. McCormick.

5723. WIMMER, F. E. Lobelioideae. Species et varietates novae ex generibus. Centropogon et Siphocampylus. Repert. Spec. Nov. Regni Veg. 19: 241-265. 1924.—The following new species and varieties are described in detail: *Centropogon acrodentatus*, Venezuela; *C. aequatorialis*, Ecuador; *C. affinis* Mart. & Gal. var. *venezuelanus*, Venezuela; *C. albolimbatus*, Colombia; *C. arcuatus*, Ecuador; *C. auratus*, Peru; *Siphocampylus aurocinctus*, Peru; *Centropogon eborinus*, Colombia; *C. grandidentatus* (Schlecht.) Zahlbr. var. *diversidens*, Mexico, and var. *australis*, Venezuela; *C. isabellinus*, Peru; *C. lanceolatus*, Venezuela; *C. Lindenianus*, Colombia; *C. longifolius*, Peru; *C. luteus*, Colombia; *C. montanus*, Ecuador; *C. pamplonensis*, Colombia; *C. Preslii*, Ecuador; *C. riparius*, Colombia; *C. rubiginosus*, Ecuador; *C. rufus*, Peru; *C. semperflorens*, Colombia; *C. umbrosus*, Peru; *C. aurobarbatus*, Costa Rica; *C. glaucus*, Panama; *C. lignescens*, Guatemala; *C. rubrosepalus*, Ecuador; *Siphocampylus actinotrix*, Peru; *S. bichromatus*, Peru; *S. capribarba*, Brazil; *S. Clotho* and var. *calvescens*, Peru; *S. corynoides*, Peru; *S. phyllobotrys*, Colombia; *S. eupeplus*, Colombia; *S. grandiflorus*, Peru; *S. lilacinus*, Colombia; *S. longibracteolatus*, Colombia; *S. Mathewsii*, Peru; *S. Mazonis*, Panama; *S. megalandrus*, Peru; *S. Moritzianus*, Venezuela; *S. oaxacanus*, Mexico; *S. obtusus*, Colombia; *S. palilloanus*, Peru; *S. pubiflorus*, Colombia; *S. secundus*, Peru; *S. trichodontus*, Ecuador; *S. venustus*, Peru; *S. versicolor*, Peru; *S. veteranus*, Peru; and *S. violaceus*, Venezuela.—Robert Woodson.

5724. WIMMER, F. E. Lobelioideae. II. Repert. Spec. Nov. Regni Veg. 19: 385-392. 1924.—The following new species and variety are described: *Lobelia anatina*, Mexico; *L. bryophila*, Mexico; *L. setulosa*, Mexico; *L. Delessertiana*, Mexico; *L. Zahlbruckneri*, Brazil; *Centropogon scabiosus*, Peru; *Siphocampylus*, *sparsipilus*, Bolivia; *Centropogon crassifolius* and var. *ovatifolius*, Ecuador; *C. Elmanus*, Venezuela; *C. Milleanus*, Ecuador; *Siphocampylus lucidus*, Ecuador; and *S. rupestris*, Ecuador.—Robert Woodson.

5725. WINKLER, HUBERT. Urticaceae papuanae novae. II. Repert. Spec. Nov. Regni Veg. 16: 175-176. 1919.—The following new species are described from New Guinea: *Pipturus Pulei*, *P. velutinus*, and *P. Ledermanni*.—Robert Woodson.

5726. WOLFF, H. Apium Weberbaueri, A. Kalbreyeri, A. Sprucei species novae Austro-americanae. Repert. Spec. Nov. Regni Veg. 17: 175-176. 1921.—These new species are described, respectively, from Peru, Colombia, and Ecuador.—J. M. Greenman.

5727. WOLFF, H. Azorellopsis, genus novum Umbelliferarum Bolivianum. Repert. Spec. Nov. Regni Veg. 19: 312. 1924.—The new genus *Azorellopsis* with 1 species, *Azorellopsis trisecta*, is described from Bolivia.—Robert Woodson.

5728. WOLFF, H. Changium, genus novum Umbelliferarum Chekiangense. Repert. Spec. Nov. Regni Veg. 19: 314-315. 1924.—This new genus, *Changium*, with 1 species, *C. smyrnioides*, is described from Chekiang Province, China.—Robert Woodson.

5729. WOLFF, H. Coriandropsis genus novum Umbelliferarum Kurdistanicum. Repert.

Spec. Nov. Regni Veg. 17: 177-178. 1921.—This new genus, *Coriandropsis*, is represented by 1 species, *C. syriaca*, and is based on *Coriandrum tordyloides* (Fenzl) Boiss., in part.—J. M. Greenman.

5730. WOLFF, H. *Hydrocotyle siamensis* spec. nov. Repert. Spec. Nov. Regni Veg. 17: 155-156. 1921.—*Hydrocotyle siamensis* n. sp. is described from Siam.—J. M. Greenman.

5731. WOLFF, H. *Ligusticum koreanum* spec. nov. Repert. Spec. Nov. Regni Veg. 17: 154. 1921.—This new species is based on Taquet's No. 108 from Korea.—J. M. Greenman.

5732. WOLFF, H. *Meeboldia*, genus novum Umbelliferarum Himalayicum. Repert. Spec. Nov. Regni Veg. 19: 313. 1924.—This new genus, *Meeboldia* is described with 1 species, namely, *M. selinoides*.—Robert Woodson.

5733. WOLFF, H. *Peucedanum Dinteri* spec. nov. aus Deutsch-Südwest-Afrika. [Peucedanum Dinteri n. sp. from German Southwest Africa.] Repert. Spec. Nov. Regni Veg. 17: 153-154. 1921.

5734. WOLFF, H. *Pimpinella bengalensis* et *P. Tessmannii* spec. nov. Repert. Spec. Nov. Regni Veg. 17: 170-171. 1921.—*Pimpinella bengalensis* n. sp. from eastern Bengal and *P. Tessmannii* n. sp. from Kamerun are described.—J. M. Greenman.

5735. WOLFF, H. *Pseudammi* gen. nov. Umbelliferarum Sibiriae occidentalis. Repert. Spec. Nov. Regni Veg. 17: 173. 1921.—*Pseudammi* n. gen. is represented by 1 species, *P. Ehrenbergii*, from the Altai Mountains and western Siberia.—J. M. Greenman.

5736. WOLFF, H. *Schlechterosciadium* gen. nov. Umbelliferarum Austro-Africanum. Repert. Spec. Nov. Regni Veg. 17: 154-155. 1921.—*Schlechterosciadium* n. gen. is based on Schlechter's No. 321 from Simonstown, South Africa. One species, *S. gracillimum*, is recorded.—J. M. Greenman.

5737. WOLFF, H. *Sium turfosum* et *S. diversifolium* species novae Coreanae. Spec. Nov. Regni Veg. 17: 172-173. 1921.

5738. WOLFF, H. *Spananthe paniculata* var. *peruviana* var. nov. *Peruana*. Repert. Spec. Nov. Regni Veg. 17: 176. 1921.

5739. WOLFF, HERMANN. Umbelliferae novae africanae. Repert. Spec. Nov. Regni Veg. 16: 234-237. 1919.—The following new species are described: *Cuminum sudanense*, Sudan; *Pimpinella Gossweileri*, Congo; *P. Krookii*, Natal; *P. Schlechteri*, South Africa; *P. hydrophila*, South Africa; and *P. filiformis*, Congo.—Robert Woodson.

5740. WOLFF, H. Umbelliferae novae africanae. I. Repert. Spec. Nov. Regni Veg. 19: 314. 1924.—*Anesorrhiza Marlothii* n. sp. is described from South Africa.—Robert Woodson.

5741. WOLFF, HERMANN. Umbelliferae novae asiaticae. Repert. Spec. Nov. Regni Veg. 16: 237-238. 1919.—The following new species are described: *Pimpinella decursiva*, China; and *P. menachensis* Schweinf., Arabia.—Robert Woodson.

5742. WOLFF, H. Umbelliferae novae asiaticae. I. Repert. Spec. Nov. Regni Veg. 19: 309-312. 1924.—The following new species are described in detail: *Pleurospermum Souliaei*, Tibet; *Cnidium Warburgii*, Formosa; *Ferula Ehrenbergii*, Siberia; *Peucedanum astrantiifolium*, Korea; and *Ferula Sintenisii*, Transcaspia.—Robert Woodson.

5743. WOLFF, H. Umbelliferarum nov. gen. *Paraselinum* Peruvianum. Repert. Spec. Nov. Regni Veg. 17: 174. 1921.—This new genus *Paraselinum* is represented by 1 species, *P. Weberbaueri*, from the Andes of Peru.—J. M. Greenman.

REVISIONS AND MONOGRAPHS

5744. FRIES, C. E. THORE. Monographie der Gattung Uebelinia Hochst. [Monograph of the genus Uebelinia Hochst.] Repert. Spec. Nov. Regni Veg. 19: 81-92. 8 fig. 1923.—This treatment of *Uebelinia* recognizes 7 species and includes 3 new species as follows: *Uebelinia Erlangeriana* (*U. rotundifolia* Oliver var. *Erlangeriana* Engler), Gallahochland; *U. spathulae-folia* Hochst., Abyssinia; *U. kiwuensis* (*U. abyssinica* Engl., not Hochst.), Tropical East Africa; *U. crassifolia*, Tropical East Africa.—Robert Woodson.

5745. MARQUAND, C. V. B. Revision of the genus *Cyananthus*. Kew Bull. 1924: 241-255. 12 fig. 1924.—A genus first placed in Polemoniaceae, later in Campanulaceae. The species range the Himalaya, western China, and into central Tibet; many are endemic to China which probably was the original center of dispersal. A key to the species is given and all are fully

annotated. The following new species are delimited: *Cyananthus fasciculatus*, Yunnan; *C. flavus*, eastern flank of Lichiang Range, Yunnan; *C. dolichosceles*, near Tachienlu, Sze-chuan, also Tongola, Kiala, Tibet; *C. argenteus*, Tsang Mountain, near Tali, Yunnan; *C. obtusilobus*, with the last. The following new varieties are described: *C. lobatus* Benth. var. *Farreri*, western China; *C. Hookeri*. C. B. Clarke var. *densus*, Sarong, Tibet; *C. Hookeri* var. *grandiflorus*, Lichiang Range, Yunnan; *C. inflatus* Hook. f. & Thoms. var. *sylvestris*, in the northeast of the Yangtze bend, Yunnan; *C. macrocalyx* Franchet var. *pilosus*, Mekong-Yangtze divide, Yunnan; *C. macrocalyx* var. *flavo-purpureus*, Kagur-pu, Mekong-Salwin divide, Tibet; and *C. macrocalyx* var. *parvus*, Yutung, Tibet.—*T. J. Fitzpatrick*.

5746. RILEY, L. A. M. The Mexican and Central American species of *Ouratea*. Kew Bull. 1924: 101-111. 1924.—A revision of this genus of the Ochnaceae is here presented. A history of the genus with notices of added species is followed by a key and synopsis of the 15 species now recognized. The following are described as new: *Ouratea insulæ*, Ruatan Island, Honduras; *O. pyramidalis*, near Atasta, Tabasco, Mexico, also in Guatemala; *O. oblita*, Mexico; *O. isthmica*, Lion Hill Station, Panama; *O. Peckii*, British Honduras; *O. stenobotrys*, British Honduras; and *O. Wrightii* n. comb. from *Stenouratea Wrightii* Van Tieghem.—*T. J. Fitzpatrick*.

5747. ROBYS, W. Revision of the genus *Sphaeranthus*. Kew Bull. 1924: 177-199. 4 fig. 1924.—This revision is mainly based upon materials at Kew and at Brussels. The genus *Sphaeranthus* was founded by Vaillant in 1719 and retained by Linnaeus in 1753. An emended description of the genus and a key to the 38 recognized species are given. All the species are diagnosed and the following 9 are described for the first time: *Sphaeranthus Johnstonii*, Kenya Colony, tropical Africa; *S. keniensis*, Kenya Colony, tropical Africa; *S. incisus*, Transvaal and Angola, Africa; *S. calcareus*, Angola, tropical Africa; *S. Lelyi*, north Nigeria, Africa; *S. madagascariensis*, northwest Madagascar; *S. variabilis*, Nyasaland, tropical Africa; *S. confertifolius*, Kenya Colony, tropical Africa; and *S. Brounæ*, Egyptian Sudan.—*T. J. Fitzpatrick*.

5748. RYDBERG, PER AXEL. Notes on Fabaceae—IV. Bull. Torrey Bot. Club 52: 143-156. 1925.—A discussion is given of the genus with key to and synopsis of the first 21 species. *Xylophacos todanthus* (S. Wats.), *X. Casei* (A. Gray), *X. Webberi* (A. Gray), *X. pephragmenus* (M. E. Jones), *X. remulcus* (M. E. Jones), *X. chloridæ* (M. E. Jones), *X. cyaneus* (A. Gray), *X. brachylobus* (A. Gray), *X. castaneaeformis* (S. Wats.), and *X. tephrodes* (A. Gray) are published as new combinations; and *X. melanocalyx*, *X. iodopetalus* (Greene), and *X. Tidestromii* as new species.—*P. A. Munz*.

5749. RYDBERG, PER AXEL. Notes on Fabaceae—V. Bull. Torrey Bot. Club 52: 229-235. 1925.—The study of *Xylophacos* is continued, several sections are keyed out, the species discussed, and *X. medius* and *X. marianus* are described as new species from Utah.—*P. A. Munz*.

5750. RYDBERG, PER AXEL. Notes on Fabaceae—VI. Bull. Torrey Bot. Club 52: 365-372. 1925.—The discussion of *Xylophacos* is completed; a total of 46 species is recognized. *X. incurvus*, *X. subvillosus*, *X. argentinus* from California, and *X. lagopinus* from Oregon are described as new. The following new combinations are made: *X. funereus* (Jones), *X. nudisiliquus* (A. Nels.), *X. candelarius* (Sheldon), *X. ventosus* (Suksdorf), *X. leucolobus* (S. Wats.), and *X. lectulus* (S. Wats.).—*P. A. Munz*.

5751. WILSON, F. C. Revision of the genus *Dicoma*. Kew Bull. 1923: 377-388. 1923.—This paper embraces the results of a critical study of a genus of the Compositae, which contains 34 recognized species, grouped in 3 sections, namely *Dimorphae*, *Barbellatae*, and *Plumosae*, all African. An ample key precedes the enumeration of species, the bibliography, synonymy, and citation of exsiccati. *Dicoma Galpini* from Transvaal, South Africa, is delimited as new.—*T. J. Fitzpatrick*.

FLORISTICS AND PLANT DISTRIBUTION

5752. ASHE, W. W. The common names of some trees. Jour. Elisha Mitchell Sci. Soc. 39: 89-91. 1923.

5753. FERGUSON, WILLIAM C. Contributions to the flora of Long Island. New York—Third paper. Bull. Torrey Bot. Club 52: 133-136. 1925.—A list is given of uncommon and rare plants collected mostly by the author, in 1924.—*P. A. Munz*.

5754. GAMBLE, J. S. The flora of Madras: V. Kew Bull. 1924: 235-239. 1924.—Short notes on various genera and species of Dipterocarpaceae, Icacinaceae, Onagraceae, Solanaceae, Lentibulariaceae, Gesneriaceae, Bignoniaceae, and Acanthaceae.—*T. J. Fitzpatrick.*

5755. GOOD, R. D. The past and present distribution of the Magnoliaceae. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 448-449. 1925.

5756. HANSEN, H. MÖEHOEM, HILMAR ÖDUM, OG MAGNUS HANSEN. *Tarentucellia viscosa* (L.) Car. fundeti Danmark. [*Tarentucellia viscosa* (L.) Car. found in Denmark.] Bot. Tidsskr. [København] 38: 441-442. 1925.—This mediterranean plant was found by Filsø at Henne in S. W. Jutland in 1923, presumably introduced with grass seed from France. It has kept alive since 1921 and thus seems to be able to persist in Denmark.—*C. A. Jørgensen.*

5757. JESSEN, KNUD. *Pedicularis sceptrum carolinum* L. genfundet i Danmark. [*Pedicularis sceptrum carolinum* L. found in Denmark again.] Bot. Tidsskr. [København] 38: 438-441. 1 fig. 1925.—The plant was found by Johs. Andersen and the author in a moist willow-shrub in the south of Jutland. It has for many years been considered extinct in Denmark, since the locality in which Th. Schiøtz found it in 1861 was destroyed. The occurrence of this plant in the southwestern part of Denmark, about 200 miles from the nearest localities in Norway, Sweden and eastern Germany, is very interesting. The plant is of the so-called "Coreal" type and is perhaps to be considered as a relict from early post-glacial period.—*C. A. Jørgensen.*

5758. KNOWLTON, C. H. Excursion to southern Vermont. *Rhodora* 27: 211-212. 1925 [1926].—An account is given of a field excursion in 1925, of the New England Botanical Club, with mention of some of the rarer plants found.—*S. F. Blake.*

5759. LÉNSTRÖM, CARL A. E. Ett fynd av ormgran (*Picea excelsa* f. *virgata*) i Ångermanland. [*Picea excelsa* f. *virgata* found in Ångermanland (province in Sweden).] Svensk Bot. Tidskr. 19: 425-426. 1 fig. 1925.

5760. MALME, GUST. O. Ett litet bidrag till Södermanlands flora. [Contribution to the flora of Södermanland (province in Sweden).] Svensk. Bot. Tidskr. 19: 423-425. 1925.

5761. MARQUAND, C. V. B. Additions to the flora of the Falkland Islands. Kew Bull. 1923: 369-371. 1923.—An annotated list of 16 species not previously recorded from the Falklands is given.—*T. J. Fitzpatrick.*

5762. OSTENFELD, C. H. *Agropyrum litorale* (Host.) Dum. Stikkende Kirk. Bot. Tidsskr. [København] 38: 442-443. 1925.—*Agropyrum litorale* is very close to *A. repens* and for years the Scandinavian botanists have looked upon it as a form of that species. Recently, Vestergren (Svensk Bot. Tidskr. 19: 1925), however, considers it a good species and Ostenfeld joins in this view. In Denmark, *A. litorale* is growing in a locality at Ridvig on Zealand. The hybrid *A. litorale* × *repens* is found in the same place and on the West coast of Jutland another hybrid, *A. litorale* × *junceum*, is not uncommon, although *A. litorale* is not recorded from that area.—*C. A. Jørgensen.*

5763. SANFORD, S. N. F. Noteworthy Rhode Island plants. *Rhodora* 27: 201-203. 1925 [1926].—Records are given of 23 species of phanerogams, chiefly from Newport County.—*S. F. Blake.*

5764. SCHALLERT, P. O. A botanical collecting trip up Grandfather Mountain, June 16, 1923. (From Proc. Soc. North Carolina Acad. Sci.). Jour. Elisha Mitchell Sci. Soc. 40: 108. 1924.—Over 1000 plants were collected. Among them were 2 lichens reported for the first time from America; 1 new species of moss and 2 of hepatics; also 1 hepatic new to America.—*W. C. Coker.*

5765. SKÅRMAN, J. A. O. Några ord om misteln (*Viscum album* L.) i Västergötland. [Notes on the mistletoe (*Viscum album* L.) in Västergötland (province in Sweden).] Svensk Bot. Tidskr. 19: 402-411. 1925.—The author states that this species now occurs in only 1 station in the province and that it will, apparently, soon disappear altogether.—*O. Heilborn.*

5766. THODAY, D. Some aspects of the richness of the Cape flora. (Abstract.) Rept. British Assoc. Adv. Sci. 1924: 449. 1925.

MISCELLANEOUS, UNCLASSIFIED PUBLICATIONS

SAM F. TRELEASE, *Editor*

5767. ANONYMOUS. **American fern society.** Amer. Fern Jour. 15: 67. 1925.—This article contains notes of interest to the Fern Society.—*E. R. Walker.*

5768. ANONYMOUS. **American fern society.** Amer. Fern Jour. 15: 100. 1925.—A list of new members and notes for members are given.—*E. R. Walker.*

5769. ANONYMOUS. **An expert view on British optical glass.** Internat. Sugar Jour. 27: 573. 1925.

5770. ANONYMOUS. **Coöperative research.** Nature 116: 853-855. 1925.—This is a leading editorial reviewing the present situation.—*O. A. Stevens.*

5771. ANONYMOUS. [Rev. of: FISHER, R. A. **Statistical methods for research workers.** $x + 239$ p. (Biological monographs and manuals.) Oliver and Boyd: Edinburgh & London, 1925.] Nature 116: 815. 1925.—The reviewer regards the book as rather difficult to follow.—*O. A. Stevens.*

5772. ANONYMOUS. [Rev. of: OPPENHEIMER, C., AND L. PINCUSSEN. (Editors.) **Tabulae Biologicae.** Band 1: **Reine und physiologische Physik, physikalische Chemie und biologische Anwendungen.** (Biological tables. Vol. 1. Physics, physical chemistry and biological applications.) vi+ 522 p. W. Junk: Berlin, 1925.] Nature 116: 896. 1925.

5773. BENTON, ANNE, AND ALAN LEIGHTON. **Actual temperatures attained by mediums in autoclave sterilization.** Jour. Infect. Diseases 37: 353-358. 1925.—It was found that the temperature developing in autoclaves varied not alone with pressure but with the degree of elimination of air pockets. The temperature developing in the media depended also upon the composition as well as the sizes of the containers or the density of the packing of tubes, etc. It is suggested that autoclaving be conducted by temperature controls and not pressure; that containers be so packed as to permit uniform access of steam in cases where uniformity of heating is desired.—*R. L. Starkey.*

5774. DAVIS, JOSEPH S., AND ALONZO E. TAYLOR. **The world wheat situation, August to November, 1925.** Wheat Studies Food Res. Inst. 2: 65-100. 7 fig. 1925-1926.

5775. FANTHAM, H. B. **The Oudtshoorn meeting of the South African Association for the Advancement of Science.** Nature 116: 916-918. 1925.—Brief abstracts of papers are given from this meeting of July 6-11, 1925.—*O. A. Stevens.*

5776. HARRISON, F. C. **The miraculous micro-organism.** (Abstract.) British Assoc. Adv. Sci. 1924: 446. 1925.

5777. NAEF, ADOLF. **Kritische Biologie und ihre Gliederung.** [Critical biology and its subdivisions.] Vierteljahrsschr. Naturf. Ges. Zürich. 68: 329-334. 1923.—A brief discussion is given of the nature of biological science. It cannot be denied that a considerable advance can be made into the organic with the methods of physics and chemistry and that considering one type of biology as applied physics and chemistry is fully justified. We know, however, that the same individual shows different characteristics under different conditions. Heredity is the carrying of potentialities of ancestral cells through to descendant cells.—*John H. Schaffner.*

5778. RAYBAUD, L. **Emploi du silicate de potassium comme médium des préparations microscopiques végétales.** [Use of potassium silicate as a medium for microscopic plant preparations.] Rev. Gén. Bot. 37: 511-512. 1925.—Potassium silicate, when used in place of Canada balsam, gives very clear microscopic preparations even from alcoholic material. It is necessary, however, to use only stains which are excessively resistant, as the silicate decolorizes many of the commoner stains. It is, nevertheless, a very useful material for rapidly obtaining inalterable preparations.—*J. C. Gilman.*

